15c

The OIL WEEKLY

OIL and GAS ENGINEERING

INTERNATIONAL AUTHORITY FOR THE PRODUCING AND PIPE LINE INDUSTRY

THE WEEK'S NEWS INTERPRETED

FEB 11 1941

EXPERIENCE

the Great Teacher..

has proved the **DEPENDABILITY** of

HUGHES ROCK BITS

Available in Popular Sizes $7\frac{7}{8}$" to $12\frac{1}{4}$"

★

Hughes Type "D" Tricone Rock Bits are especially designed for Medium Hard Formations, such as Lime Rock—Hard Shale—Medium Sand Rock and Hard Anhydrite; assuring fast, straight, full-gage hole.

★

HUGHES TOOL COMPANY • HOUSTON TEXAS

PERFORMANCE

ON 78% OF THE WELLS IN THE EAST TEXAS FIELD

HISTORY was made in the East Texas Field, in oil—and in oil-well cement. In 1930, 'Incor' cemented Dad Joiner's #3 Daisy Bradford and the other discovery wells. Ten years later, 'Incor' cemented the McVey Well, at Kilgore, 25,000th in the Field. In that 10-year period, 78% of all the wells in East Texas were cemented with 'Incor' and Lone Star.

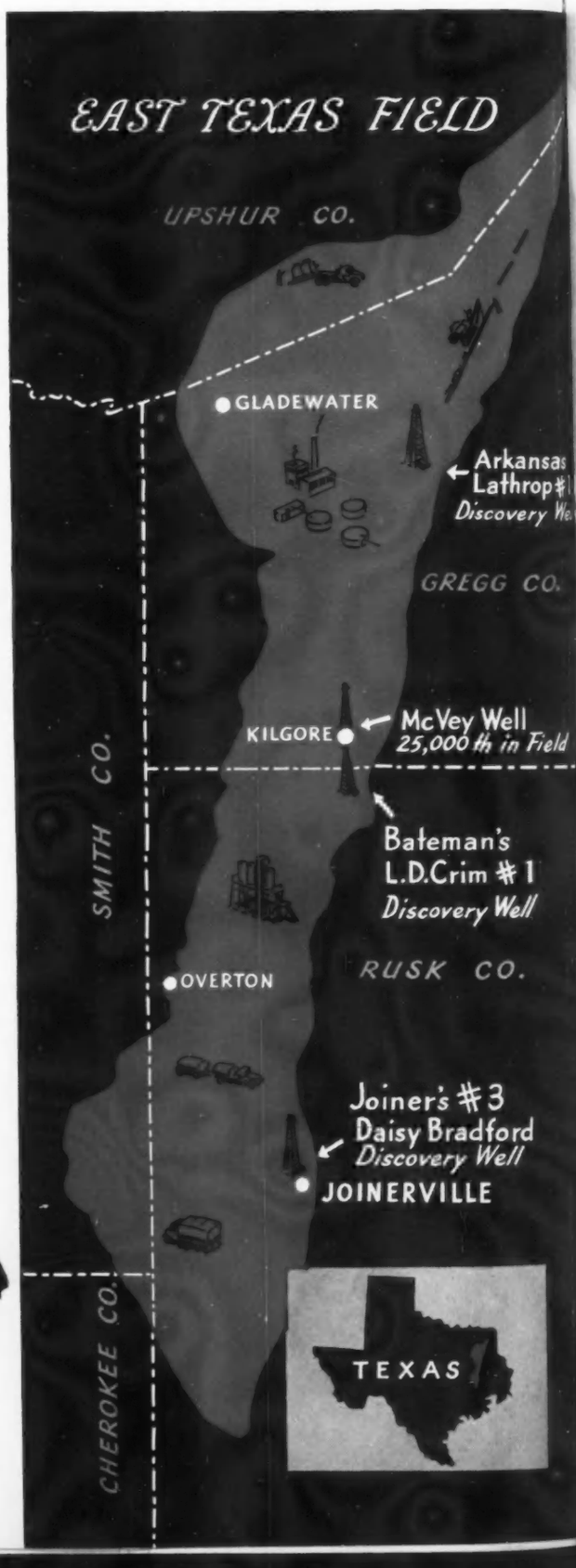
Today, 3,100,000 sacks of 'Incor' lie behind many million feet of pipe in East Texas, helping to protect a total investment of upwards of $250,000,000.

That says performance—performance befitting an Oil Man's Cement—the same kind of performance that Lone Star, 'Incor'* and 'Starcor'* are giving today in every leading field.

To maintain this outstanding performance record, in the face of constantly changing conditions, the Lone Star Cement Corporation never lets up studying cementing problems in the field—and backs up this field research with continuing product research in the Lone Star Oil-Well Cement Research Laboratory. That is how 'Starcor' was developed, for deep wells and high temperatures. And that is why Oil Men can rely on Lone Star to *keep on* keeping abreast of the Industry's ever-changing needs. "When better cement is made, Lone Star will make it." *Reg. U. S. Pat. Off.

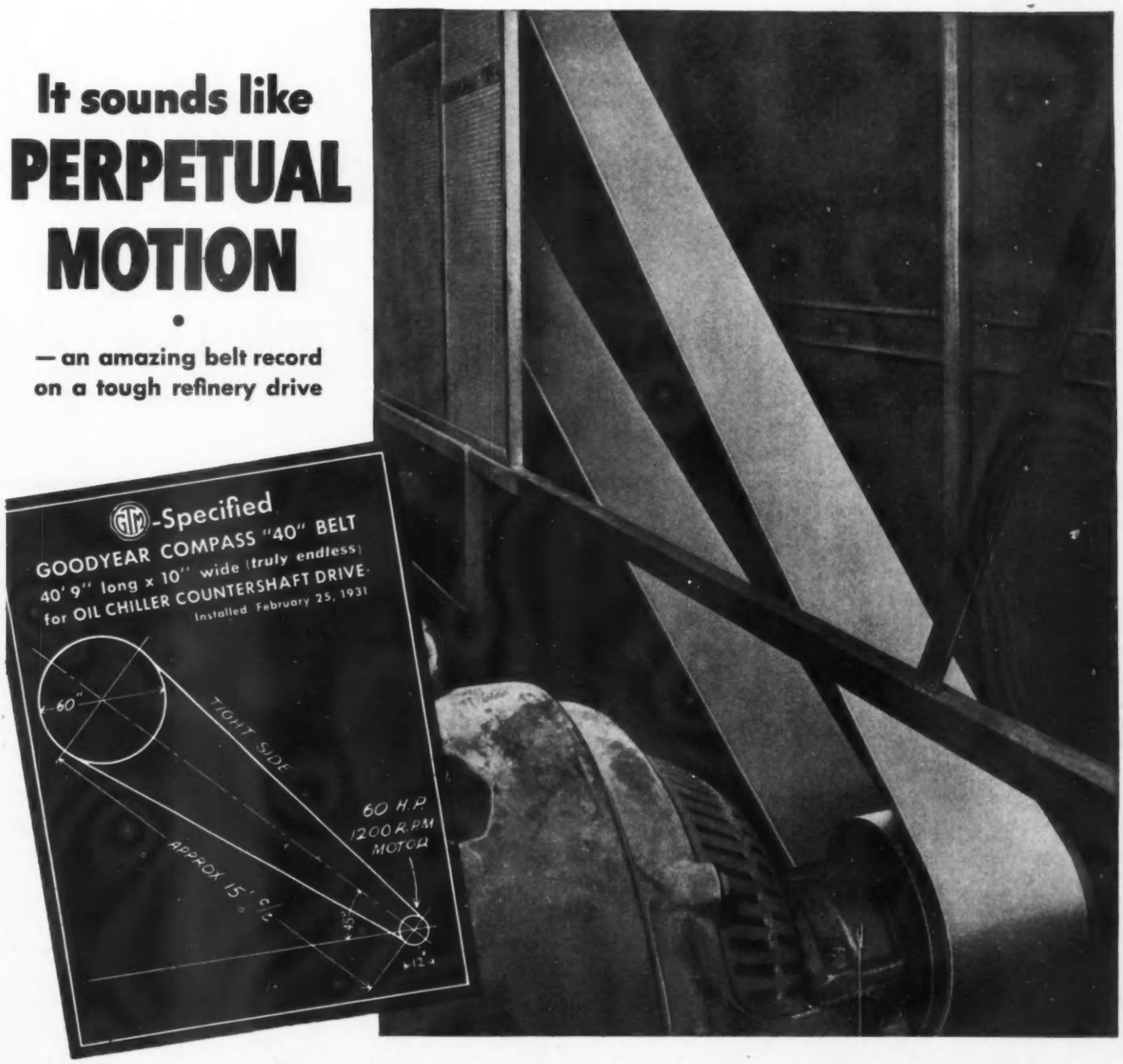
LONE STAR CEMENT CORPORATION

DALLAS: Santa Fe Building HOUSTON: Shell Building



It sounds like PERPETUAL MOTION

— an amazing belt record on a tough refinery drive



A BIG mid-western refinery had been having considerable trouble in belting their 60-hp. oil chiller countershaft drive satisfactorily. Ordinary endless belts quickly stretched beyond the take-up limits; spliced belts had to be shortened periodically, causing frequent shutdowns.

Then, on February 25, 1931, a Goodyear Compass "40" truly endless belt was installed on the recommendation of the G.T.M.—Goodyear Technical Man. Today, more than nine years later, the Compass is still on the job, and during six of these nine years it has operated continuously 24 hours a day, 7 days a week, 365 days a year *—a total of 52,560 hours without stopping!*

After such long-distance performance you'd expect a belt to be the worse for wear, but not this Compass. In all nine years it has not had a single take-up or repair—and it still looks good for several more years of dependable service!

Let the G.T.M. show you the patented Compass features that explain many similar records on the oil industry's hardest drives. To bring the G.T.M. to your plant, write Goodyear, Akron, Ohio, or Los Angeles, California — or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

BELTS
MOLDED GOODS
HOSE
PACKING
Made by the makers of Goodyear Tires

THE GREATEST NAME IN RUBBER
GOODYEAR

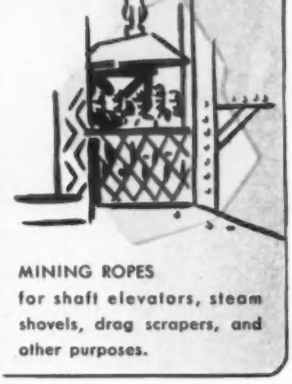
COMPASS—T. M. The Goodyear Tire & Rubber Company

Wire went to work

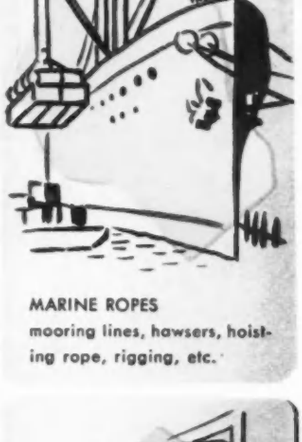
when John A. Roebling made America's first

ELEVATOR ROPES
for applications ranging from private residence "lifts" to high speed skyscraper elevators.

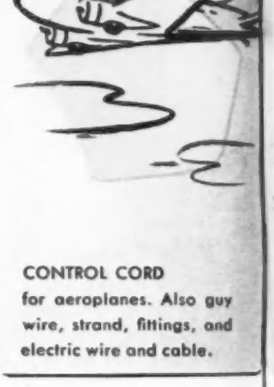
AERIAL TRAMWAYS
for passengers, freight, etc., including Patented Constam Ski-lifts illustrated above



MINING ROPES
for shaft elevators, steam shovels, drag scrapers, and other purposes.



MARINE ROPES
mooring lines, hawsers, hoisting rope, rigging, etc.



CONTROL CORD
for aeroplanes. Also guy wire, strand, fittings, and electric wire and cable.

SHOVEL ROPES
wire ropes for excavating equipment, cranes, hoists, and other rope-rigged machinery.

OIL FIELD LINES
for rotary and cable tool drilling and every other oil field use.

STRIP STEEL
cold rolled high carbon "flats" for unending uses from steel measuring tapes to corset stays.

WOVEN WIRE FABRICS
from window screens to fine metallic filter cloth or coarsest mesh sizing screens.

MAGNET WIRE
for electric motor, generator, and coil windings. Insulations for every need.

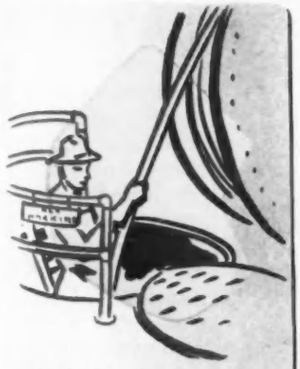
1841 FORWARD MARCH

WIRE ROPE AND STRAND,— Preformed and Standard .....
FITTINGS...SUSPENSION BRIDGES AND CABLES...AERIAL WIRE ROPE SYSTEMS...COLD ROLLED STRIP...ELECTRICAL WIRES AND CABLES

for mankind

wire rope - 100 years ago!

FLAT WIRE
cold rolled high carbon steel flat wire for shoe shanks, clocksprings, heddles, etc.



ELECTRIC CABLES
over 60 types of electric wires and cables for every purpose.

TELEPHONE WIRE
bare galvanized, switchboard cable, twisted pair and parallel, etc.

DRAWN and ROLLED SHAPES
high or low carbon, for many uses including flexible shaft casings of dental equipment, miniature railroad tracks, etc.

Over 100 years ago John A. Roebling made America's first wire rope. Wire alone had been a useful but feeble servant of mankind. But, now, wire really went to work!

The first Roebling Wire Rope was used for hauling Pennsylvania Canal Boats up the Portage Railway. Then, came Roebling Cableways, installed in many countries to transport construction materials across streams and gorges—followed by the first suspension aqueduct for the old Pennsylvania Canal.

John A. Roebling's first wire rope has made possible many of our modern industrial and commercial achievements . . . great suspension bridges from coast to coast, from the "George Washington" between New York and New Jersey to the "Golden Gate" Suspension Bridge in San Francisco —high speed elevators for skyscrapers—oil well drilling—mechanized mining—modern highway building—and other accomplishments too numerous to mention.

Today, Roebling's "Forward March with Wire" encompasses not only wire rope but a great variety of other Roebling Wire Products including, in part, Electric Wires and Cables, Woven Wire Fabrics, Welding Wire, Cold Rolled Steel Flat Wire, and many others.

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, N. J.
Branches in principal cities
Export Division: 19 Rector Street, New York, N.Y., U.S.A. Cable Address: "Roebling's" New York

WITH WIRE

1941

WELDING WIRE . . . ROUND AND SHAPED WIRE . . . WIRE FORMS
WIRE CLOTH AND NETTING . . . STEEL AND COPPER RODS
HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS

SYMBOLS of DEFENSE

A RED Keystone is the insignia of the 28th Division, National Guard of Pennsylvania. Commanded by Major General Edward Martin, the men from the Keystone State were ordered to active duty this month. Its enviable record during World War I included fighting on five offensive sectors. It lost 14,139 men killed and wounded, more than any other National Guard Division, except one. Nick-named the Iron Division.

CIRCLE L1

TOUGH as the men who wear the Red Keystone are the steel castings which bear this mark. Circle L1 is a high strength alloy steel which has won a reputation for standing up under especially severe service. A Medium Manganese Steel with Molybdenum which is widely used in the rough and tumble service of the oil fields, it is now finding a place in the weapons of our rearmament program.

LEBANON STEEL FOUNDRY
LEBANON, PA.
Original American Licensee George Fischer (Swiss Chamotte) Method

LEBANON *Stainless and Special Alloy* STEEL CASTINGS

HIGH LIFTING COST?

CALL FOR YOUR →

★

DARLING
VALVE & MANUFACTURING CO.
WILLIAMSPORT, PENNA.

★

FOR REAL SERVICE SELECT
DARLING
VALVE CUPS

SALES ENGINEER

Looking Ahead
WITH THE EDITORS

GREATER USE OF CHEMICALS in drilling and producing operations is an interesting development of the industry.

Acid now is being used along the Gulf Coast for increasing oil production from sand formations, removal of drilling mud, cleaning screens, removing cement, releasing stuck drill pipe, cleaning and completion of salt-water-disposal wells, and completion of gas-injection wells. Use of acid for treating limestone formations is an old practice, but the more recent adaptations have followed extensive research along different lines. Acids used are not necessarily new products, but rather are combinations designed to meet certain requirements. Completion of an oil well necessitates use of materials (cement and mud) that tend to contaminate a producing formation. Acids have proved useful in the removal of these materials, prior to placing wells on production.

THE OIL WEEKLY will present an article on the newer uses of acid in oil, gas-injection and salt-water-injection wells shortly.

PIPELINING still finds the East Texas field contributing to the demand for crude carriers, the Pan American Pipe Line Company's new 10- and 12-inch line from the big field to Texas City being designed for a 60,000-barrel throughput, and built for an estimated pumping life of perhaps half a century.

Due to adverse weather and continued flooded conditions of all the streams crossed by the line, the construction of this line demanded all the ingenuity—and patience—of the contractors. River crossings, extended for several times the surveyed underwater sections, required sectional fabrication of the line and cumulative tie-ins as the crossing was made. Other hazards included a golf course, rigidly barred to all "machinery" except sharpshooter and shovel, and a busy Ship-Channel tunnel tie-in.

The line itself is engineered for straight-run scraper operation, powered with marine-type diesels, and composed of graduated string line pipe to compensate for maximum discharge pressures.

The story of the construction of this line is scheduled for an early issue.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

FOR BETTER SERVICE

Byron Jackson Co. Announce the Appointment of

GREEN HEAD BIT & SUPPLY CO.

Houston, Texas and Scott, Louisiana

for Exclusive Gulf Coast Sales and Service of

BJ ELLIOTT WIRE LINE CORE DRILL

HERE ARE FACTS

ABOUT the BEST METHOD of TAKING CORES

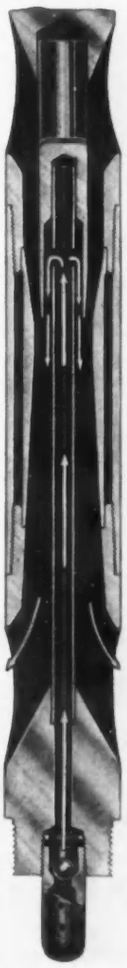
By utilizing the principle of a Venturi tube, the exclusive Elliott INNER BARREL VALVE reduces pressure on the inner barrel as much as forty pounds per square inch. The resulting suction assists easy entrance of the core into the inner barrel, eliminating friction, so that soft sands (even when interbedded with Shales) are recovered in their true form. The accurate cross-section of formation thus obtained is ideal for determination of all characteristics by geologists and engineers.

The inner barrel rides on a shoulder in the drilling bit where circulation pressure holds it securely in position to receive the core. No driving mechanism is required for rotation of the inner barrel, nor is a mechanical lock required to hold the inner barrel in place. Free, unobstructed passage of the streamlined assembly is thus secured, both when it is dropped or retrieved from the hole.

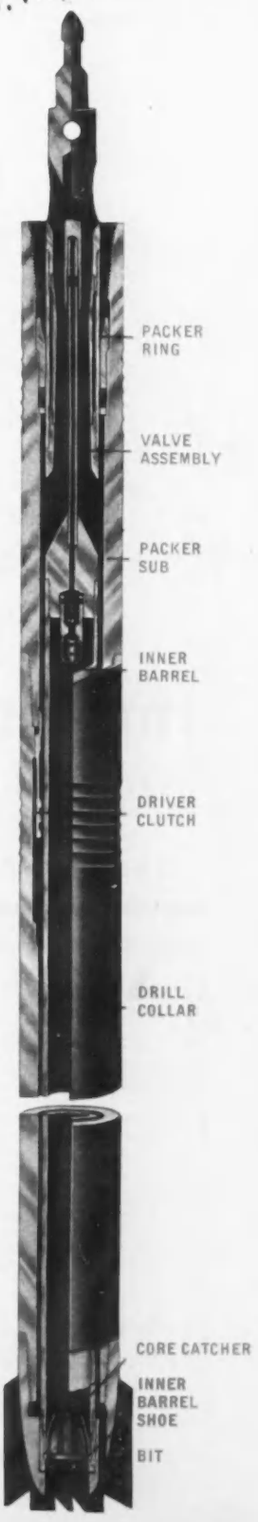
By directing the discharge circulation close to the bottom of the piloted-type bit, the reamer blades are kept clean and cool and all cuttings are flushed off the bottom. New formation is constantly exposed, regrinding of cuttings is avoided, faster drilling is secured, and greater footage obtained from the bit.

The inner barrel has no bit ahead, and full length cores are readily taken with a rock head in hard formations. All parts are sturdy in construction, and many small parts have been eliminated.

It is truly a simple matter for an experienced driller to start at once to take good cores, with maintenance costs and down time reduced to a minimum.



(Above) When fluid is directed through a venturi tube, the pressure is lowest where velocity is highest. By following the arrows above you can readily see how suction is exerted upward through the Inner Barrel.



(Right) Depending upon the formation being drilled and cored, either Drag-type or Rock-type Bits are used.

BJ ELLIOTT WIRE LINE CORE DRILL

BYRON JACKSON CO. ✱ Houston • LOS ANGELES • New York

CHOKES
are not Always in the Wells . . .

CHOKES are indispensable in the proper production of many wells. Just the opposite is true when production and development activities are choked by lack of needed finances.

To the fast-moving oil industry an understanding bank is essential. It is the constant aim of the Republic to meet the variety of needs of the oil industry as they arise.

REPUBLIC NATIONAL BANK
OF DALLAS

MEMBER FEDERAL DEPOSIT INSURANCE CORP

ONE OF THE NATION'S 100 LARGEST BANKS

ACIDIZING HAND BOOK

By BENSON M. KINGSTON

A timely, thoroughly practical book on a most important subject

Acidizing Hand Book takes up the purpose of acidizing, gives full information on formations which are treatable, tells how to determine treatability of formations, how to prepare a well for acidizing, and contains a section of tables extremely valuable to an operator planning to acidize a well.

The book is divided into 14 chapters which include:

Chemistry and Geology of Treatment—Treatment Acid—Preparation of Wells for Treatment—Mechanics of Treatment (4 chapters)—The Reaction of Salt Water to Treatment—Producing the Well After Treatment—Acidizing Gas Wells—Re-treatment and Multiple Stage Treatment—Other Uses of Muriatic Acid in the Field, and Computations in Acidizing.

The author has had many years of experience in practical work acidizing wells. The Acidizing Hand Book has a Fabrikoid binding, size 5½ x 8 inches, and contains 78 pages.

PRICE $1.50, POSTAGE PREPAID
Address Book Department

Gulf Publishing Co., Houston, Texas

Letters to the Editors

DEAR SIRS:

After having returned from a several months' trip which included South America, we are now beginning the membership campaign of the American Association of Oilwell Drilling Contractors. Our first regional meeting is scheduled to be held in Bakersfield, California, on Thursday, February 13. We expect to have meetings thereafter in each of the several regional divisions of the association. In each of these meetings we propose to have an organization meeting in the morning and a group meeting in the afternoon. The morning meeting will be attended by contractors, oil company representatives, supply company representatives and trade journal representatives. The afternoon meeting will be attended by these same individuals together with all members of contract drilling organizations who can be present, including floormen, drillers, tool pushers, and so on. Later in the spring, probably at Tulsa, during the oil show, we propose to hold the first annual meeting of the association.

I shall not discuss in this letter the details and purposes of the association, but shall send you within the next few days an address which I propose to use at each of these meetings. Naturally we are anxious to obtain the support of the various trade journals representing the oil industry and we are confident that your support of us now will be greatly to our mutual advantage. The contracting industry is a very important part of the oil industry, though at present it is in a weak and unhappy position. The association proposes to improve the status of the contractor by enlisting closer cooperative efforts and greater efficiency in his operations. In other words, we propose to improve our operations to the point where we can drill better hole at less cost and be more useful generally to our clients.

The association will offer the proceeding of its various meeting to the several trade journals equally and at the same time, in hopes that each will carry all that it conveniently can in its publications.

I am sending itentical letters to *Drilling, Petroleum Engineer, Petroleum World* and *The Oil and Gas Journal*. We would like for each of the journals to be represented at our several meetings in order that they may report actions taken therein.

J. E. BRANTLY, *President*
Drilling and Exploration Company, Inc.
Los Angeles, California.

THE OIL WEEKLY is fully aware of the unhappy state in which the Drilling Contracting profession or industry finds itself, and shall be only too happy to extend every cooperation in connection with the newly organized American Association of Oilwell Drilling Contractors. We have gone over the purposes of the new association with Brantly and agree that there is a genuine need for such an organization and the educational work it proposes.

THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

EDITORIAL STAFF
WARREN L. BAKER
Editor
J. KENT RIDLEY
Managing Editor

ASSOCIATE EDITORS
L. J. LOGAN — BRAD MILLS
WM. V. GROSS

DISTRICT EDITORS
B. F. LINZ.....Washington
J. V. HIGHTOWER.....New York
BEN ALTMAN, FRANK TAYLOR.....Tulsa
H. H. KING.....Fort Worth
EARL S. POST.....San Antonio
R. W. BYRAM.....Austin
WM. H. STRANG, Z. H. MISCHKA, ELTON STERRETT.....Houston

PUBLISHED BY
THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS

R. L. DUDLEY, *President*
A. L. BURNS, *General Manager*
S. W. ROBINSON, *Editorial Director*
TOM W. NELSON, *Advertising Manager*

Staff correspondents at all important points.

Member Audit Bureau of Circulation
Member Associated Business Papers, Inc.

BRANCH OFFICES
NEW YORK.....250 Park Ave.
PITTSBURGH.....Vandergrift Bldg.
CHICAGO.....332 S. Michigan Ave.
LOS ANGELES.....W. W. Wilson Bldg. Huntington Park, Calif.
TULSA.....Hunt Bldg.
FORT WORTH.....W. T. Waggoner Bldg.
SAN ANTONIO..Smith Young Tower Bldg.
WASHINGTON.....Albee Bldg.

ADVERTISING STAFF
DICK SWINSKY.....New York
C. A. WARDLEY.....Pittsburgh
H. G. FITZPATRICK.....Chicago
J. F. CARTER, JR.....Tulsa
JAY CURTS, JR.....Los Angeles
CHAS. WYATT.....Houston

CIRCULATION DEPARTMENT
J. T. WAGONER.....Manager

SPECIALIZED OIL JOURNALS
Published by
THE GULF PUBLISHING COMPANY

The Oil Man's Calendar

FEB.	
17-20	**American Institute of Mining & Metallurgical Engineers, New York.**
24-25	**Liquefied Petroleum Gas Association, Chicago.**
27-28	**American Petroleum Institute, Division of Production, Southwestern District, Shreveport.**
MAR.	
1	**North Texas Oil & Gas Association, Wichita Falls.**
11	**American Petroleum Institute, Division of Production, Spring Meeting, Pacific Coast District, Los Angeles.**
APR.	
1- 3	**Society of Exploration Geophysicists Houston.**
2- 4	**American Association of Petroleum Geologists, Twenty-sixth Annual Meeting, Houston.**
3- 4	**Society of Economic Paleontologists and Mineralogists, Houston.**
7-11	**American Chemical Society, St. Louis.**
15-17	**Southwest Gas Measurement Short Course, University of Oklahoma, Norman.**
16-18	**Western Petroleum Refiners Association, Hot Springs, Ark.**
17-18	**American Petroleum Institute, Division of Production, Eastern District, Pittsburgh.**
23-25	**Petroleum Industry Electrical Association, Tulsa.**
23-25	**Natural Gasoline Association of America, Dallas.**
24-25	**National Petroleum Association, Semi-Annual Meeting, Cleveland.**
MAY	
2- 3	**Petroleum and Natural Gas Conference, State College, Pa.**

Contents « February 10, 1941

Volume 100, Number 10

The Changing Panorama..... 11

Feature Section:

Rapid Penetration With High Rotary Table Speeds.... 12

Germany Seeks New Order in European Oil Supplies... 16
BY HANS BAHR

Better Concept of Fault Pattern Aids Piercement Salt Dome Development..... 19
BY M. M. KORNFELD

Principles of Drilling Mud Control..... 21
BY SILVAIN J. PIRSON

Well Completions This Year Run Below 1940 Curve.... 33
BY L. J. LOGAN

Practical Hints for the Drilling Rig..... 38

News Section and Index..... 43

Looking Ahead With the Editors..... 4

Letters to the Editors..... 6

Notes for the Equipment Buyer and User..... 77

Squeaks from the Bull Wheel..... 79

Index to Advertisers..... 80

Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

Copyrighted 1941 by The Gulf Publishing Company.

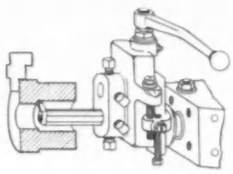
Get MORE PRODUCTION *from your* PRESENT TURRET LATHES

20% MORE PRODUCTION *with this* NEW WARNER & SWASEY SLIDE TOOL *on an* OLD TURRET LATHE

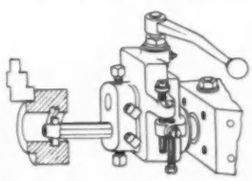
● On a grooving operation on an aluminum fan housing, production was stepped up 20%. The diagrams show how this new slide tool handles boring, recessing, grooving, facing, inside facing, back facing operations. The feed lever can be set in any position. One complete turn of the handle moves the cutter two inches. Adjustable stops and micrometer dial govern slide travel and assure accuracy of cuts. This slide tool, which handles operations never before combined in one tool, is only one of 596 improved tools that can help you produce more from your present turret lathes. Write

YOU CAN TURN IT BETTER, FASTER, FOR LESS
...WITH WARNER & SWASEY TOOLS

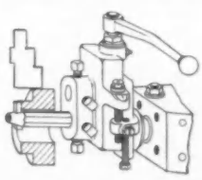
WARNER & SWASEY
Turret Lathes
Cleveland



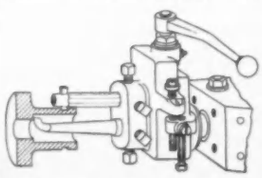
1. Deep Hole Facing. When end of bore is reached, the operating lever moves the Angular Stub Boring Bar, and deep hole face is cut squarely and accurately.



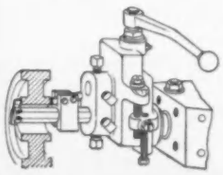
2. Recessing. Here a Straight Cutter Stub Boring Bar recesses an inside groove. The graduated dial stop screw can be set to hold and repeat accurate depths.



3. Back Facing. Here a Straight Cutter Stub Boring Bar back faces the piece.



4. Boring and Outside Grooving. When the boring cutter finishes the inside cut, the slide is lowered and the Straight Stub Boring Bar Cutter forms the outside groove.



5. Straddle Facing. Two Cutters simultaneously face both sides of the piece.

THE OIL WEEKLY

FEBRUARY 10, 1941

VOLUME 100 NUMBER 10

The Changing Panorama

Gasoline Stocks Up Sharply . .

Despite the good results obtained in November and December in holding down additions to gasoline stocks, it now appears that the industry may go into the spring-summer season with a gasoline inventory of approximately the same large proportions as that which over-burdened the market throughout 1940.

All previous highs were exceeded when the stocks were built up last spring to 103,500,000 barrels, through the necessity of maintaining large refinery runs in turning out urgently needed heating oil.

But that record now is being challenged, for in recent weeks there has been similar extraordinary processing of crude, with heavy, industrial-grade fuel oils as the urgently needed product, and with gasoline again going into storage in excessive volume.

Stocks of finished and unfinished gasoline in the United States were expanded by the larger-than-normal amount of 2,100,000 barrels in the week ended February 1; and in the 5 weeks since December 28 additions have averaged 1,520,000 barrels per week. Continuance of additions until the end of March at the rate of 1½ million barrels a week, from the 90,864,000-barrel level of February 1, would boost the stocks to 103,000,000 barrels as of March 31. Such an inventory would be the same as that held at the beginning of spring last year, although it would be somewhat less burdensome, because of the gain which has occurred since a year ago in the total demand for gasoline.

Petroleum economists are expecting total demand for gasoline to be around 5½ percent larger in 1941 than in 1940, calculating that domestic consumption will be up about 6½ percent and that exports may be down further about 15 percent. If it is assumed that working stock requirements will be proportionately larger, then minimum needed gasoline stocks for the 1941 season will be around 5,000,000 barrels above the actually required working stocks of the 1940 heavy consuming season. Accordingly, 103,000,000 barrels for March 31, 1941, should not be more burdensome than about 98,000,000 barrels would have been on March 31, 1940. However, economists estimated minimum requirements at only about 82,000,000 barrels as of March 31, 1940; and the necessary stocks as of March 31, 1941, are estimated at 85,000,000 barrels.

Heavy Fuel Put in Storage . . .

In the week ended February 1 the industry succeeded for the first time since last October in turning out as much heavy fuel oil as the markets absorbed. Whereas the stocks of residual fuel oil were steadily reduced from 108,475,000 barrels on October 26 to 100,297,000 barrels on January 25, they were built back to the small extent of 131,000 barrels, or to 100,428,000 barrels, in the week ended February 1.

Residual Stocks Low . . .

The present stocks of 100,428,000 barrels of residual fuel oil are 2,000,000 barrels smaller than those held a year ago, whereas demand for heavy fuel has increased materially, to record-breaking proportions, along with the war- and defense-induced expansion of industrial and commercial activity; principal users of the heavy fuel oils being the shipping lines, railroads, electric power plants, factories, mines, and smelters.

Pills for War Fuel Ills . . .

Reports continue to be circulated that German chemists have produced a synthetic motor fuel in concentrated tablet form, which provides a fuel for motorized units when mixed with water.

First rumors of such a fuel came from France, where German tank and truck drivers were said to have been seen to drop tablets into gasoline tanks, measure out water, and then drive away.

The London publication, *The Petroleum Times,* in commenting on these reports, stated that unverified information indicated the tablets had been in production for about nine months, and that semi-official quarters declared such fuel required a special cylinder that had been installed in one third of the army cars. Tablets were said to range in size from one to three cubic inches, to be composed of a whitish substance ringed by a greenish salve, and to dissolve in water in 90 seconds.

If these reports of gasoline pills are true, it is possible the Germans may be using calcium carbide, which, when mixed with water, forms acetylene gas, an explosive product that can operate internal combustion engines.

Meanwhile, the recent conscription of bicycles for military use indicates that Germany's petroleum supply is becoming more acute.

In addition, consular reports state that utilization in Germany of wood and charcoal for motor-vehicle fuel is to be expanded greatly. Timberland owners will be required to deliver quotas of wood to designated receiving depots. More than a million cubic yards of wood are expected to be used during 1941 for this purpose.

Table speeds of 450-500 revolutions per minute took this well to 10,000 feet in 19 days.

Rapid Penetration With High Rotary Table Speeds

WELLS are being drilled to comparatively great depths, many as deep as 12,000 feet, with rotary table speeds of 450 and 500 revolutions per minute furnishing unusually rapid penetration rates. Experimental speeds of 750 revolutions per minute have been achieved without causing a breaking down of drill-stem harmonics, and some operating companies in the 11,000-foot Rio Bravo, California, field are considering speeds as high as 1000 revolutions per minute.

Speeds of 450 and 500 revolutions are being obtained with present materials and equipment. While tables are being manufactured and tested at 1000 revolutions per minute, drill-pipe strings permitting continued use of such speeds have not been assembled.

In order to get satisfactory service from equipment at 500 revolutions per minute, it is necessary that many units be synchronized, and several problems are yet to be solved before speeds of 750 or 1000 revolutions per minute can become common.

If high table speeds are to be used, a well defined plan must be outlined and followed that will cover every piece of equipment, including the derrick and substructure. Even the drilling mud must be conditioned by one who understands that various types of shales, clays and rock formations encountered in rapid sequence must be protected by a low water-loss mud sheath. Proper maintenance and inspection of the various machinery items is an important function of such work.

Many of the derricks on California wells where high table speeds are used have built-in floor sills and a steel grillage to raise the floor about 8½ feet above the ground level without constructing a true derrick substructure. Since the derricks are invariably utilized for many wells by skidding from one location to another, the leg foundations are of heavy crossed steel beams resting, in most cases, on wooden mats. Instead of the former concrete piers, an excavation is made at each corner of the derrick location, and is filled with water-tamped sand upon which the heavy timber mats are laid. With elevated derrick floors, the conventional deep concrete cellar is replaced by a shallow rectangular one of massive monolithic construction, having eyes imbedded in the floor which are used to attach turnbuckles for hold-downs. If wooden mats are not used, a large concrete pad is poured which covers all the area beneath the derrick, and designed for useful operation after the well is completed as a working floor when servicing tubing and flow controls. As the walls, floor and the immediate area at the cellar support the rotary table, adequate footing is built into the concrete to support the loads imposed upon the grillage when running long strings of drill pipe and setting casing.

The hoisting equipment is large and powerful, with transmissions,

clutches and brakes designed for speed and immediate control of all operations. Many of the travelling blocks are streamlined to pass easily up the derrick when a large number of drill pipe stands are on the finger board. The swivels are designed for high rotation speeds, and have streamlined fluid passages. Maintenance of swivels is watched closely, and spares are available for replacing one which may show indications of leaking or other failure. Both rubber and metal rotary hose are employed, with ball bearing swing joints, and most wells are equipped with two standpipes and a stand-by hose which may be quickly connected to the swivel if necessary.

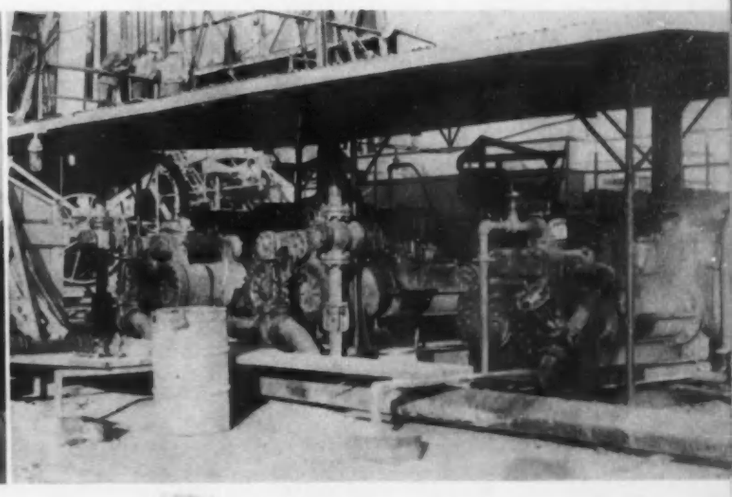
No one piece of equipment can be considered of greater importance than another when drilling at high table speeds. Each unit must be in first class mechanical condition and designed to eliminate vibration. Tables for high rotating speeds are made with various gear ratios, and some have pinion and table teeth matched for a ratio of 2.61:1. Lubrication is vital to any high-speed machine, and the tables are equipped with oil reservoirs and adequate means of distributing the lubricant to all bearings.

On most rigs where high table speeds are practiced, the table drive has been divorced from the draw works and a submarine drive installed. The table driving engine is placed on the floor-supporting grillage close to the ground surface, usually in line so that the connecting chain matches the engine sprocket and the sprocket on the table pinion shaft. On some rigs two chains are employed, permitting an increase or decrease in the engine-pinion shaft speed ratio. One chain runs from the crank shaft sprocket through an oil bath case to a jack shaft, and the second from the jack shaft sprocket to the pinion shaft sprocket at the desired angle, which is usually about 45° from the horizontal. On a few rigs the table engine is located outside the floor area on adequate foundation supports opposite the table pinion shaft, and a line shaft transmits the power from the engine beneath the derrick floor to a point where the usual chain drive can be hooked up. Pillow blocks are hung on the vertical members supporting the derrick floor, permanently lined up to prevent distortion and vibration. The table drive engines are invariably horizontal twins with adequate reserve power to handle any table operation employed. An arrangement of shafting and universal joints enable the driller to control throttle positions with a chain drive wheel mounted on a pedestal near the end of the brake lever. Some of the throttle valves are designed with a quick steam-bleeding arrangement and ports so that the table can be stopped instantly without carry-over.

Two Kelly Styles

The kelly assumes a distinctive importance when used with high table speeds, and octagon and hexagon styles both are used. The conventional square kelly is not employed with high table speeds for several reasons, among which is a tendency for mechanical binding at the corners of the bushing that prevents the stem from floating freely through the table while making hole. When unit of a machine is rotating at high speeds, it must possess inherent stability or excessive vibration and whipping will develop. The kelly used on high-speed rigs has a uniform wall thickness and a true concentric bore, with a minimum deviation from these characteristics from one end to the other. It should receive exceptional care when shipping, rigging up and breaking out the joints and lowering into the rathole, and should not be distorted so that the initial alignment is disturbed. If the stem is not perfectly true, both as to bore and straightness, the entire string will be off-balance and defeat high table speeds at the very beginning. The kelly bushing offers the least resistance to the passage of the kelly downward. After each connection to add a joint of drill pipe, the face of the kelly is lubricated by brushing oil over it while rotating, reducing the friction at the points of contact between the stem and the bushing.

The drill pipe generally used to drill for the water string is 5-9/16-inch, full-hole external upset. Some of the most recent strings are equipped with welded tool joints, but the separate screwed type of tool joints are still used extensively. Each individual joint of drill pipe is inspected carefully and frequently to eliminate those which may have been deformed when hauling from rig to rig. Frequent checking covers the entire string to eliminate any part which may indicate an imperfection from corrosion, erosion or excessive wear. The pins and boxes, as well as the shoulders of the tool joints, are handled with extreme care, and a pin is never dropped heavily on the shoulder or box when stabbing a new joint of pipe.



Left, a battery of 350-pound boilers used for high table speed drilling.

Right, mud pumps provide discharge pressures as high as 1800 pounds.

When making up the tool joints or breaking down the pipe, it is set low on the slips in the table so that the strain of bucking up with tongs and cathead will reduce the possibility of pipe distortion.

Eighteen Tons of Collars

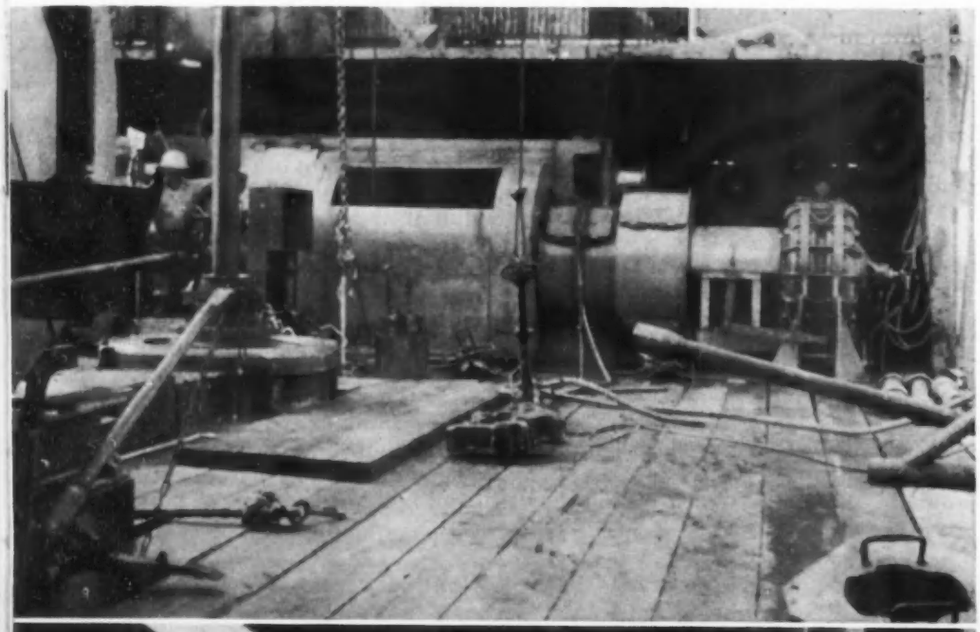
Between the drill pipe and the rock bits, the usual set-up includes approximately 18 tons of 8¼-inch drill collars, selected for close tolerance of wall thickness. They must be handled with extreme care when standing in the derrick or shipping from one location to the other to prevent kinking and bending. When drilling at table speeds of 450 to 500 revolutions per minute, the string of drill pipe above the drill collars is held in tension, with the collar weight in compression on the rock bit. This method maintains a deviation-free hole with rapid formation penetration. By keeping the string of drill pipe in tension, it will take the balanced form of a rotating shaft, assuming that no deformation exists in any part of the pipe or the tool joints. The bits used with high table speeds are invariably of the rotating member rock type.

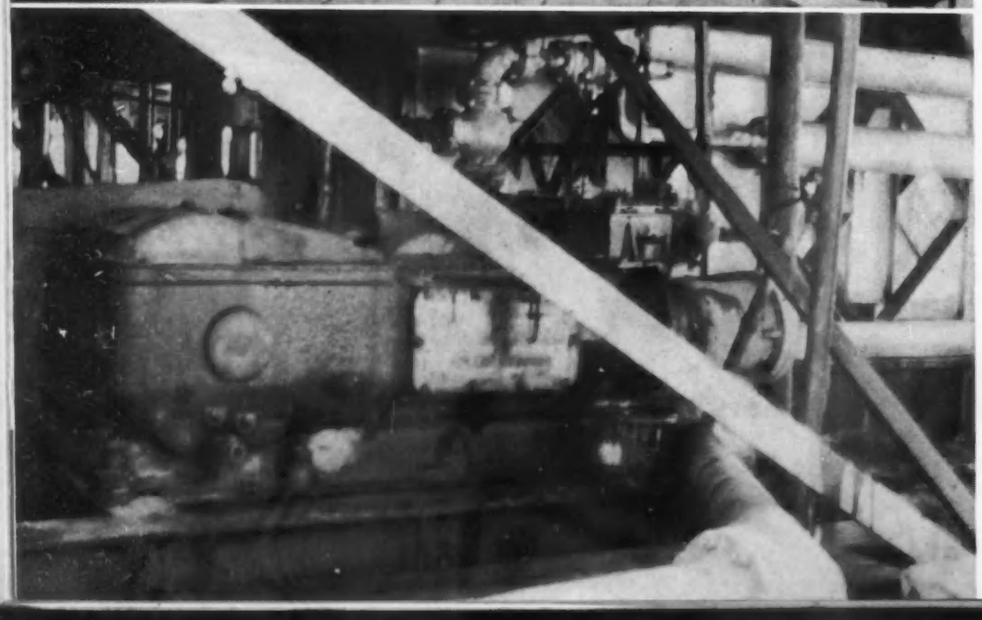
The size of the bit largely determines the success of high rotation speeds when 18 tons of drill collars are in compression at the bottom of the hole. The size most used for this type of drilling is 11-inch. Bits which cut a smaller hole, including the 10⅝- and 10-inch, have been used with high table speeds, but experience has determined that the 11-inch is the best of these three sizes. Bits smaller than 10-inch have been tried, but penetration rates have not been maintained. The difficulty lies in the bearings, which deteriorate more rapidly, and therefore require a greater number of round trips for replacements. With the 11-inch rock bit, a well was recently drilled to 10,000 feet in 19 days while the table speed was maintained between 450 and 500 revolutions per minute. The number of bits required for drilling an average well in Rio Bravo runs between 40 and 50.

Instrumentation on the derrick floor, both indicating and recording, has never assumed a more important role, and are essential when table speeds are high. Since the weight of the drill pipe must be hanging in tension on the swivel, and the weight of the drill collars in compression upon the rock bit, any deviation from this rule generally changes the operation to a marked degree. The weight indicators show the amount of weight upon the bit and the weight of the pipe in tension. If 18 tons is the weight of the string of drill collars, that is the weight which the driller should maintain upon the rock bit. The instrument panel is located in front of the draw works drum case at an angle permitting the driller to easily read all of the instruments. The torque indicator, the tachometer or revolution indicator, and the mud pump pressure indicator are as important as the weight indicators, and none can be used successfully without the other.

The mud pumps are generally set in pairs so they can be operated in parallel, but the manifolds are arranged so that they can be compounded, or operated in series, if and when high pump pressures are required. Pumps as large as 15½ x 9¼ x 22-inch are used, in parallel and sometimes compounded, and it is not unusual to use discharge pressures of 1700 and 1800 pounds on the mud to the standpipes and rotary hose so the desired circulation is obtained through the ports of the bits against the bottom of the hole.

Hydraulic action of mud circulation on the formation at the bit cone teeth is closely interwoven with the rate of penetration. High rate of mud circulation is essential to obtain high penetration rates, and large quantities of mud are necessary to prevent overheating the bit cone bearings. Drilling mud is watched closely to control viscosity, weight and other characteristics, including water loss to the formation. Chemicals mixed with the drilling fluid, and the stream is always passed through shale shakers to separate coarse cuttings. If sand from the formation accompanies the mud in quantities suffi-



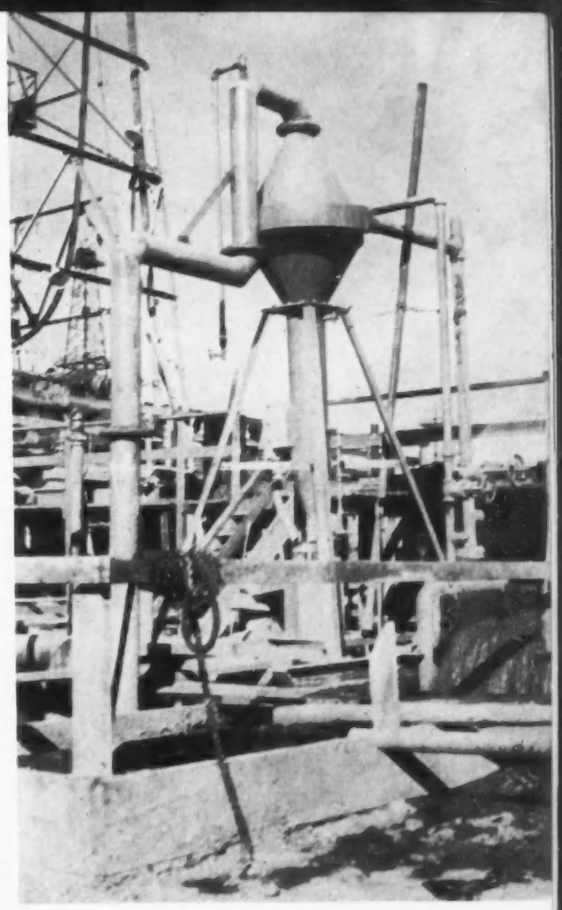


A large draw works is required for deep drilling with high table speeds.

Below, a rotary engine is mounted on a steel foundation beneath derrick floor to provide an independent drive.

cient to cause wear of pumps, liners, valves and fittings, and excessive wear of the bit cone bearings, it is removed by settling or by pumping through a de-sanding machine.

The weight of 36,000 pounds of drill collars creates an enormous strain on the relatively small bearing surfaces of the rock bits, and rotating members are subjected to high temperatures. Since lubrication of the cone bearings is obtained solely from the circulation, a mud with an appreciable quantity of abrasive matter will prematurely end the life of a bit, necessitating a round trip to screw on a new bit. The mud in the bit bearings may be likened, in consistency, to a bowl of whipped cheese. It will instantly become baked and brick-like by the heat of the bit if not handled properly. While the circulation is maintained at the required rate, heating of the bit members is controlled by mud volume, but when the kelly has been sunk into the bushing, the bits will freeze if rotation is stopped. Just as the last of the kelly sinks below the top of the bushing, the weight is picked up by the draw works and rotation maintained with about six to eight tons of weight on the bit while the rotation is slowed gradually to 50 or 75 revolutions per minute. Mud circulates during this time through the ports of the bits, cooling bearings sufficiently to prevent freezing. If bit cooling is not accomplished properly, freezing will prevent the cones from rotating on their bearings, resulting in a flat cone almost as quickly as rotation is started again. Over-heating of bits and cone bearings has been one of the chief arguments against high rotation speeds. It can be overcome when the driller realizes that certain precautions must be taken just before rotation is stopped.



A desander aids in conditioning drilling mud, eliminating a cause of wear on pumps, liners, valves and fittings.

One of the most important phases is the human element. The driller, regardless of the type of equipment that can be assembled and rigged up, is the deciding factor. Not all can become high speed drillers. If a man is capable of throwing aside many of the practices he has been accustomed to use, such as setting the tools to feed off at a constant rate, he may become a successful high speed driller. He must accustom himself to brake drilling. The rate of penetration usually occurs so rapidly that changes in formation will follow at high frequency, and the driller must keep a weather eye on the control panel and learn again to feel what the tools are doing a mile and a half away.

Drilling at high table speeds does not mean that the driller is to race the engine the moment the tools rest on bottom with the proper tension and compression, but means that judicious acceleration or deceleration must be applied to the table. There are times when the bit will ball up, and the speed must be controlled to a point that the teeth will free themselves from the sticky shale.

Since it is almost impossible to make up a string of drill pipe, drill collars, kelly and bit to form a perfectly balanced rotating unit, somewhere in the rotative speed there will occur a distortion of drill-string harmonics resulting in extreme vibration. This period of distorted harmonics may develop at any speed, but not throughout the entire range. After the driller has had sufficient experience while drilling at high table speed, he is able to race the drill pipe through the vibration period into one where motion flows smoothly. If the drill pipe has only one off-balance spot, the entire string will assume a vibration similar to a button on a cord. There is only one thing to do in this case, come out of the hole and remove the offending joint of pipe.

Convenient facilities for the mud engineer to check circulation is provided under a corner of derrick floor.

The benefits obtained from high rotation speeds appear to be numerous, some of which, however, cannot be directly attributed to high table speed in itself, but a concomitance of the inspection given the drill string as a whole. When each set of tool joints is inspected and passed in first class condition, and each stand of pipe checked to ascertain that no imperfection exists; when the mud is of the proper type and possesses characteristics for the formation penetrated, and the weight on the bit is neither too much or too little, drilling may be accomplished at any speed without difficulty. High table speeds, plus all the large and small items which go towards making up a long string of drill pipe in first class condition, have resulted in digging rates that require a new connection every 12 minutes.

High table speeds is a relative matter. One type of formation may permit drilling speeds as high as 750 revolutions per minute, while another formation cannot be penetrated at anywhere near that speed. But when a given string of drill pipe, plus the kelly and drill collars, has made hole after hole without even a bit failure, high table speeds must possess distinct advantages.

Germany Seeks New Order In European Oil Supplies

By DR. HANS BAHR

ONE of the economic aims of Germany in the dream of a "new order" in Europe is establishment of a balance between Continental Europe's petroleum supply and consumption. Such balance could be achieved, according to the accompanying article by Dr. Hans Bahr of Hamburg, Germany, by use of Europe's own production (277,500,000 barrels in 1938) plus the greater part of the Near East output (about 100,000,000 barrels of that region's 1938 production of 120,000,000 barrels); Continental Europe's consumption in 1938 having been 373,220,000 barrels.

The article appeared in the German publication *Wirtschaftdienst* on July 19, 1940, and its English translation was published originally in the United States Bureau of Mines publication, *International Petroleum Trade*, from which source it has been taken by THE OIL WEEKLY.

The Near East, according to the article, is the natural and economically proper source for making up Europe's deficiency of petroleum, despite numerous international problems. Great Britain is said to stand outside the European block and should obtain its supplies from American oil fields.

THE structure of the mineral-oil supply for continental Europe will differ essentially after this war from that of the pre-war period. Even today, numerous facts are available and many observations are on hand to justify this conclusion. The consolidating block of a major-areal economy for continental Europe begins to stand out in its ideological, political and economic outlines. The intellectual concept which underlies it as a "new order" is thereby not to be compared economically with similar-appearing ideas of the past, as the present German economic concept has introduced into it essentially new elements.

Through the extension of the British attempt at blockade to almost the entire continent of Europe and through the continental counter-blockade, a formulation of a mineral-oil balance within the framework of the new economic concept, which otherwise probably would not have come into effect until later, has even today automatically come about. In this connection, it is advisable to compare the statistics of production and consumption for the year 1938, the last year of peace, as it may be presumed that the post-war development will proceed from these figures.

The European consumption of mineral oils cannot be read simply from the figures of production and imports because of the accumulation of stocks and for other reasons as well, but rather it had to be ascertained in fairly complicated investigations through estimates by experts. The two most reliable estimates of this sort are those of the technical journal "Courrier des Petroles" and of the Cities Service Company of New York. From a combination of these estimates, the statistics of consumption in Europe are shown in Table 1.

Accordingly, continental Europe consumes less than one-fifth of the world consumption and about one-third of the consumption of the United States of America.

While in the past, the supply of raw material for any country depended on the most diverse factors, such as the situation of the international markets and the exchanges, the costs of transportation, politically-conditioned trade treaties, the influence of international capital and complications of corporate structure, currency problems, etc.—accordingly on a multitude of factors which were often divergent—in a major-areal economy the superior points of view of the national economies of the populations living in the area stand predominantly in the foreground. Reduced to a simplifying formula: "Economic agreements instead of trade treaties." In consequence, the European petroleum consumers will be supplied to a much wider extent than formerly from the area in which the national economies are placed by nature and in which they must be able to live—so far as possible, independently of any disturbances from without.

From Table 2 it is evident that the domestic production of the area is not adequate to meet its mineral-oil requirements. But it is also not the purpose of a major-areal economy to be absolutely self-sufficient and to shut itself off in any way from the neighboring areas. On the contrary: just as in the mineral-oil balance cited above, the independent area of the USSR was already brought into a close connection with the central and western European area, so similar natural connections exist with northern Africa and the Near East.

Here close at hand from a standpoint of traffic

TABLE 1

Mineral Oils Consumed in Europe, 1938

	Barrels
Western Europe:	
France	54,000,000
Spain	4,000,000
Portugal	1,530,000
Total Western Europe	59,530,000
Northern Europe:	
Norway	4,730,000
Sweden	9,900,000
Finland	2,070,000
Baltic Countries	1,100,000
Denmark	6,550,000
Total Northern Europe	24,350,000
Greater Germany:	
Pre-war Germany and Austria	55,600,000
Protectorate of Bohemia and Moravia	2,220,000
Former Poland	3,350,000
Total Greater Germany	61,170,000
Intervening Countries:	
Netherlands	10,950,000
Belgium	6,650,000
Switzerland	3,470,000
Total Intervening Countries	21,070,000
Southeastern Europe:	
Greece	2,490,000
Hungary	1,960,000
Turkey	1,180,000
Yugoslavia	965,000
Bulgaria	785,000
Rumania	14,220,000
Total Southeastern Europe	21,600,000
Southern Europe:	
Italy	21,000,000
Eastern Europe:	
U. S. S. R.	164,000,000
Total Europe	373,220,000

Note: Converted from original data at the rate of 7.8 barrels per metric ton.

and in a situation which it is expected will be safe from a strategic standpoint also after the war, are very great oil fields, those of Iraq, Iran, Saudi Arabia and Bahrein Island. The production of these fields is so great (Table 3) that they are unquestionably in a position to give to continental Europe at any time sufficiently large quantities.

That is to say, their production is considerably more than the deficit of our oil balance, as calculated above. Moreover, all these areas are just at the beginning of their productive development and can unquestionably be put in a position to produce much greater quantities. Moreover in this connection reference must be made to the fact that in the future, meeting the mineral-oil requirements of continental Europe will be facilitated further by a long series of measures in the individual countries which are being energetically carried out during the present war. Of these factors the following may be mentioned:

A. Rumania:
   1. Intensification of drilling in the old fields.

TABLE 2

Crude Petroleum and Petroleum Substitutes Produced in Europe, 1938

	Millions of Bbls.
Crude Petroleum:	
Rumania	48.4
Poland	3.8
Albania	.8
U. S. S. R.	205.0
Total Crude Petroleum	258.0
Synthetic Production:	
Italy	1.7
Germany	17.8
Total Synthetic Production	19.5
Grand Total	277.5

(Invisible reserves, 293,000,000 to 330,000,000 barrels.)
   2. Beginning of production in the yet undrilled fields of Moldavia and Wallachia. (Estimated reserves 1,467,000,000 barrels.)

B. Germany:
   1. Increase in synthetic production after new 4-JP works begin operations.
   2. Considerable increase in petroleum production; also in the government (of Poland?—Ed.).
   3. Petroleum from Alsace.

C. Italy:
   1. Increase of Albanian production of crude petroleum to 2,000,000 barrels annually.
   2. New plants for hydrogenating lignite.
   3. New shale-oil plants.
   4. Increased utilization of methane.
   5. Increased production of power-alcohol from wood and millet.

D. Balkan Peninsula:
   1. Successful discovery of petroleum in Hungary (self-sufficient in 1941?).
   2. Promising prospecting for petroleum in Yugoslavia and Slovakia.
   3. Prospect-drilling in Greece and Bulgaria.

E. Northern countries:
   1. Extension of Estonian shale-oil plants.
   2. Increased utilization of wood-gas generators.
   3. Greater production of sulphite spirit.

F. USSR:
   1. More intensive production in the old fields (invisible reserves, 25,500,000,000 barrels).
   2. Development of the new oil fields between the Volga and the Urals ("Second Baku"); invisible reserves estimated at 18,000,000,000 barrels.
   3. Third five-year plan provides for an increase of production until 1942 to 394,000,000 barrels annually.
   4. Greatly increased capacity for export.

Await War's Outcome

It is altogether possible and quite conceivable that, even with the help of these large-scale works in all countries concerned, an essential improvement of the petroleum balance of the European area is to be indicated after the war. At least, however, by these works a higher percentage of the increase in consumption which is to be expected later will be met.

From these most important basic facts of the European petroleum situation are derived a multitude of problems which are today still unsettled. Each individual question of these is in itself quite comprehensive and complicated; they can, therefore, be sketched here only in broad outlines, in order to illuminate the basic tendencies of the new petroleum policy of this area:

1. The size and economic manifold patterns of the

TABLE 3

Production of Near East, 1938

	Millions of Bbls.
Iraq	32.6
Iran	78.4
Bahrein Island	8.3
Saudi Arabia	.5
Total	119.8

European continent will in the future also necessitate a certain natural division of the area into sections.

a. If we turn to the special question before us, it follows that Western Europe for example—especially France, rich in harbors, with its long seacoast—in the future also will obtain its mineral-oil products over the sea-lanes. Here the natural source of supply is undoubtedly the Near East, especially Iraq, from which the pipe lines lead to Haifa and Tripoli. If in recent years this oil already has an increasing share in the French petroleum supply, so it would be natural today if this tendency should be even increased. In contrast to this, the French receipts from Rumania and the USSR (altogether about 2,634,000 barrels in 1938) would be throttled down, as this petroleum lies more favorably situated for the supply of Central Europe and part for Italy.

b. The situation of Spain and Portugal is similar to that of France; only these countries possess today no refining industry of their own, and are accordingly not in a position, as France is, to refine crude petroleum from the Near East.

Southeastern Countries Are Rumanian Customers

c. The southeastern countries are the natural customers of Rumania so far as they are not able in the future to increase their own production until, like Hungary, they can over a long or a short period become self-sufficient in petroleum.

d. An areally-conditioned supply for the northern countries presents for the future especially difficult but also interesting traffic problems. Previously they were all supplied predominantly by overseas countries, often with Great Britain as the country of transit. Today they are said to receive certain quantities of mineral oil from Rumania and the USSR, as well as shale-oil gasoline from Estonia. It is now conceivable that after the completion of the great Russian waterway from the Black Sea to the Danube and the North German rivers notable changes will take place, thereby knitting more closely Northern Europe and Southeastern Europe. Here perspectives open up which by no means concern only the mineral oil supply.

e. For Italy, the Rumanian production (with the projected pipe line from Ploesti to Trieste) is important from a standpoint of location, as in the future also the Russian deliveries over the sea route and the mineral oils from the Near East are of growing importance for this country from a standpoint both of national economy and strategy of traffic.

f. Just as the supply of Italy from Rumania and from Russia has already been intensified during the war, much was also furnished from Germany, in order to divert the former imports from these countries over the sea route around Gibraltar now to the Danube route or to the rails. Here the near future calls for still other large tasks and raises great problems of traffic. The question of cost will occupy a broad area therein, for after all the broad sea route was considerably cheaper and quicker than the way of the Danube boats ever was. This question of cost likewise holds good for the northern countries with such a switch of traffic, and for them as well as the North German areas the development is today hard to foresee.

2. If the planned supplying of the Continental European consuming area from European or neighboring areas is already raising a multitude of open questions of distribution and direction of traffic policy, so today just as unclarified is the regulation of this problem in terms of capital (often politically conditioned). One may recall the foreign control in the Rumanian petroleum industry, of which it has been calculated that of its total capital of 12,000,000,000 lei, only 25 percent is in Rumanian possession, but 35 percent in British-Dutch, 22 percent in Belgian-French, and 10 percent in American hands. The fact that about 60 percent of the Rumanian petroleum production is treated in refineries owned by British capital is also pertinent. It is obvious that here a basic change has entered, of which the beginnings already commence to be outlined.

The extraordinary concentration of power of the British oil capital in the countries of the Near East and the problems which today develop out of that fact have been presented in *Wirtschaftsdienst,* Vol. XXV, No. 13, March 29, 1940. It is therefore superfluous to treat this subject again more thoroughly. Just as in that paper, our present observations lead automatically to the conclusion that a fundamental change for the future for these countries would even be natural and after the ending of the war would therefore be necessary also. An elimination of the British imperialism from the Mediterranean Sea attaches these areas closely and from a strategic viewpoint safely to the European block, without thereby relieving them of the proper tasks of their own area and at the same time of supplying their Oriental neighboring countries.

The Near East and the USSR are accordingly the two naturally-given neighboring areas to supply mineral oils for the European block, which together with their own production can assure at any time a greatly increased demand for mineral oils.

Great Britain Out of European Block

3. So far in all these questions the oil supply of Great Britain was deliberately disregarded, as it stands outside the European block. Corresponding to the maritime situation of this country, whose economy in view of the connections with the areally distant Empire is subjected to quite different conditions than that of the continental countries, its supply of raw materials also must be appraised according to absolutely different points of view. For Great Britain, the American oil fields are obviously the natural sources of supply—especially when its influence on the Mediterranean Sea is broken—but in no case countries like Rumania, from which Great Britain in 1938 obtained 2,667,000 barrels of mineral oils, or the USSR, from which Great Britain imported 2,283,000 barrels in 1938.

It may be emphasized once more: The purpose of the observations and considerations given above cannot lie in presenting today definite prognoses for the future. The reality will probably shape many things quite differently. Here the question was to show once in a single example on the one hand how great and manifold are the forces of a European major-areal economy of a new type, what tendencies this idea bears within itself, what great economic problems it unfolds at the same time, and what revolutions it automatically involves!

Better Concept of Faulting Patterns Aids Piercement Salt Dome Development

By M. M. KORNFELD, Consulting Geologist

THE basis for any well-established concept of salt-dome fault technique has been lacking, except for some experimental work, for many years. The problem is extremely complex. Well records on the older piercement - type salt domes reveal little that can throw light on dislocations of sediments. Geologists hesitate to tackle such a puzzle except where there is sufficient drilling accompanied by detailed sample studies and perhaps electrical logging records, before mapping faults.

[1] Link, Theodore A., "Experiments Relating to Salt-Dome Structures," *Bull. Amer. Assoc. Petrol. Geol.*, Vol. 14, No. 4, pp. 483-508, April, 1930.

[2] Torrey, Paul D. and Fralich, Charles E., "An Experimental Study of the Origin of Salt Domes," *Jour. Geol.*, Vol. 34, 1926, pp. 224-334, Figures 1-10.

Petroleum geologists, oil operators and drilling contractors in general can accelerate the development of salt-dome exploration by a better understanding of the location and distribution of oil segments of production. This is being made possible by a knowledge of the fault zones which invariably accompany every vertical salt uplift. These fault zones may dislocate the cap rock and flank producing areas in such manner as to make the ordinary means of exploration so hazardous as to require excessive uneconomic drilling before finding production. Today experimental master fault systems superimposed upon salt dome maps can be used to help solve the riddle of the locations of fault zones which ordinarily cannot be revealed except by the drill.

Fortunately, the experimental work of Theodore A. Link[1] and earlier writers such as Paul D. Torrey and Charles E. Fralich[2] offers encouragement to Gulf Coast petroleum geologists and oil operators. Especially at this time, when many producing companies and drilling contractors are turning their attention back to the old established piercement - type salt domes, a better understanding of fault zone hazards will tend to reduce the number of dry holes drilled in the search for flank production.

Flank production possibilities of

Experimental Diagram Piercement Salt Dome Areas — Pentagonal Radial Fault System

IDEAL CONDITIONS

FIGURE 1

Plan (Top) View of Faulted Piercement Salt Dome Oil Field, Ideal View, Five-Radial Fault System, Showing Barren Areas Between Oil Segments.

FIELD VARIATIONS

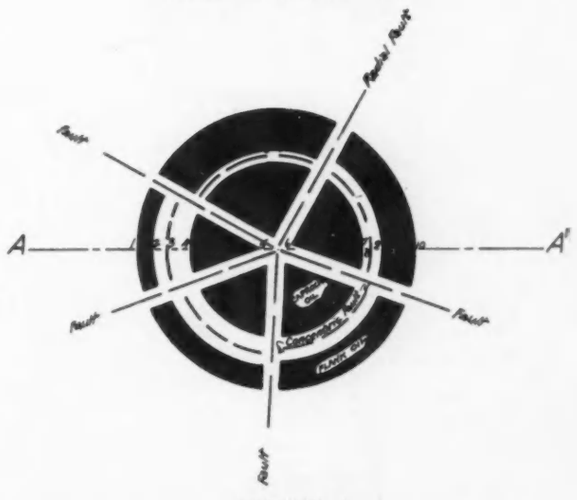


FIGURE 2

Plan (Top) View of Faulted Piercement Salt Dome Oil Field, Example of Field Variations, Showing Dislocations and Variations in Breadth of Oil Segments.

salt domes are being enhanced as it becomes possible to go beyond old drilling limits with also a better understanding of the problems of heaving-shale conditions. It is only necessary to mention a few of the later discoveries such as West Columbia, Orange, Thompsons, Fannett, and Esperson in Texas; and Bayou Blue, West Hackberry, Welch, Sorrento and Valentine in Louisiana, to indicate that the present decade may see among other developments the second great salt-dome drilling campaign of the Gulf Coast.

Theodore A. Link in 1930 showed by experimentation that there were two principal types of tension "breaks" or faults connected with vertical uplifts, namely (1) peripheral or concentric "breaks" and (2) radial tension fault fissures. As far back as 1926, however, a Gulf Coast geologist, George M. Bevier[3] discussed "circumferential" and radial fault patterns of Barbers Hill and Damon Mound oil fields, both piercement salt domes. It remained for D. P. Carlton[4] in 1929 to publish illustrated fault diagrams in connection with the West Columbia field. Since that time scattered references have been made to faulting on piercement and deep-seated salt domes, but little has been done to use Link's experimental results.

On the basis of Link's work it is possible to construct theoretical diagrams of possible oil or gas production on piercement-type salt domes (see illustrations). These diagrams are a combination of both experimental and field data but are only examples of possibilities rather than actual cases. Radial fault patterns may be variable but the pentagonal system seems to dominate. Concentric or peripheral faults produce barren zones between top (cap rock) and flank producing areas.

The recognition of fault patterns or systems in relation to piercement salt domes, and also deep-seated domes (not treated in this article), is still in its infancy. Much more experimental work and field studies remain to be done. However, if attention is refocussed on the curious segmentation of oil and gas areas around the areas of vertical salt uplift it will be possible, following Link's work, to follow certain lines of geological attack in making well locations with a far greater degree of success than has been possible using the old trial-and-error methods.

In addition to the Pliocene-Miocene and Oligocene areas, largely explored, on the top of piercement salt domes the flank producing areas offer encouragement in a large variety of formations including the Frio, Vicksburg, Jackson, Cockfield, Yegua, and Cook Mountain sands. The deep-seated salt structures also have yielded production from the Mount Selman and Wilcox formations. With such a variety of sands ranging almost throughout the Tertiary sediments available for extension and new exploration on known salt domes and structures the older oil fields will again occupy the center of the oil picture.

One of the most important reasons why the older salt dome fields offer much promise in future Gulf Coast oil production is that it is only in recent years that there have been made the advances in engineering technique that were largely unknown in pioneer salt-dome development. It is only necessary to mention a few examples such as electrical well logging, core analysis, soil analysis surveys, geochemical well logging, well logging by radioactivity, and well surveying to indicate the possibilities in the older fields.

Already it is possible to use a knowledge of salt dome fault patterns in the interpretations of soil surveys. Planes of disturbance, or faults, are the agencies by which gaseous, liquid and solid hydrocarbons are found at or near the earth's surface. The delineation of fault zones should play an increasingly important role in further petroleum studies in the Gulf Coast.

[3] Bevier, George M., "The Damon Mound Oil Field, Texas," *Bull. Amer. Assoc. Petrol. Geol.*, (Geology of Salt Dome Oil Fields), p. 631, 1926. Also "The Barbers Hill Oil Field, Chambers County, Texas," Ibid, p. 535, 1926.

[4] Carlton, D. P., "West Columbia Salt Dome and Oil Field, Brazoria County, Texas," *Bull. Amer. Assoc. Petrol. Geol.*, (Structure of Typical American Oil Fields), Vol. 2, p. 466, 1929.

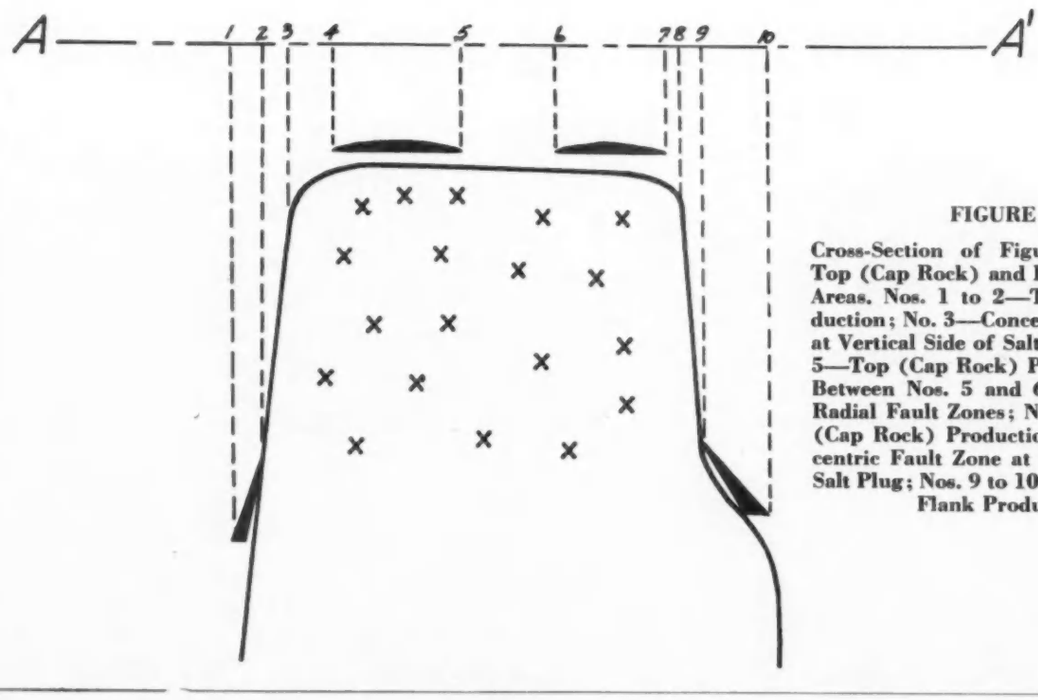


FIGURE 3

Cross-Section of Figure 2, Showing Top (Cap Rock) and Flank Producing Areas. Nos. 1 to 2—Thin Flank Production; No. 3—Concentric Fault Zone at Vertical Side of Salt Plug; Nos. 4 to 5—Top (Cap Rock) Production; Area Between Nos. 5 and 6 — Juncture of Radial Fault Zones; Nos. 6 to 7—Top (Cap Rock) Production; No. 8—Concentric Fault Zone at Vertical Side of Salt Plug; Nos. 9 to 10—Thick (Wide) Flank Production.

Principles of Drilling Mud Control

Part 1

By SYLVAIN J. PIRSON
Head, Petroleum and Natural Gas Department, The Pennsylvania State College

THE control of rotary drilling mud has been assuming an increasing importance in the petroleum industry. Someone has laconically expressed this situation by saying that down to 5000 feet the drilling of a well is a mechanical problem whereas below that depth it becomes a drilling mud problem. Due to this growing importance of drilling fluids, a large number of private and oil companies research workers have contributed a great deal toward the scientific understanding of the principles involved in clay suspension control with the results that better standardized field measuring methods are now applied.

Rotary drilling mud may be defined as any circulation fluid capable of removing drill cuttings from the bottom of the well. In the great majority of rotary wells, the fluid consists of a colloidal clay suspension in water but special muds have also been used for special purposes. On account of the great importance of clay suspensions in water, they will be the main object of this article, which represents a collection of presently available data expressed in simple language.

THE drilling mud specialist, in his quest for understanding the phenomena governing the behavior of clay suspensions, has been compelled to draw heavily on informations accumulated in other branches of scientific endeavor, more particularly on soil and ceramic sciences which apply to a large extent the principles of colloid chemistry to this special field of interest. The petroleum engineer is not often versed in this special branch of chemistry and therefore is at a loss to understand the reasons for the chemical treatment to which he submits his drilling fluid, notwithstanding the contradictory statements which have often appeared in the literature.

It is the purpose of this series of two articles to explain in as simple a language as possible the properties of drilling fluid with which the petroleum engineer in charge of drilling fluid control will come in contact in his daily routine work and in his scientific readings. Therefore the reader should consider the articles as a coordination of presently available information on the behavior of drilling muds rather than an original contribution by the author.

I. Origin of Clays

Clays are found in nature under the form of unconsolidated sediments which are the end products in the weathering of silicate rocks. Clays are, so to speak, found in the intermediate stage between disintegration of igneous rocks and consolidation of their products of disintegration which make the great bulk of our sedimentary rocks. If clays had gone through the process of sedimentary solidification they would have yielded shales, slates, and other commonly known sedimentary or metamorphic rocks. As it is, clays are usually found in the form of soft, loose, easily mined accumulations in pockets or in layers.

According to Clarke,[1] the common igneous rocks from which clays may be formed when exposed to similar weathering conditions, may be classified according to their relative solubility as given in Table 1.

The earth crust is composed mainly of feldspars, feldspathoids, micas, pyroxenes, gabbros, amphiboles, and olivine plus products of their decomposition forming sedimentary rocks. They are all aluminum silicates, composed mainly of silicon, aluminum and oxygen. In all, these three elements account for some 83 percent of the earth crust. The processes by which the igneous aluminum silicates of the earth crust are decomposed are very complex and various physical and chemical processes enter into play in order to produce their disintegration or weathering. The weathering processes may be classed according to Table 2.

The results of the weathering processs are twofold: first, a transformation of the physical properties

TABLE 1

Easily Soluble	Less Soluble	Practically Insoluble
1. Pyroxenes, $CaO(Mg.Fe)O.2SiO_2$	1. Biotite, $(H.K)_2O.2(MgFe)O.Al_2O_3.3SiO_2$	1. Quartz, SiO_2
2. Amphiboles, $CaO.3(Mg.Fe)O.4SiO_2$	2. Feldspathoids, Leucite, $K_2O.Al_2O_3.4SiO_2$	2. Muscovite, $K_2O.3Al_2O_3.6SiO_2.2H_2O$
3. Olivine, $2(Mg.Fe)O.SiO_2$	3. Plagioclase Feldspars Anorthite, $CaO.Al_2O_3.2SiO_2$ Albite, $Na_2O.Al_2O_3.6SiO_2$	3. Zircon, $ZrO_2.SiO_2$
4. Pyrite, FeS_2	4. Alkalic Feldspars Orthoclase, $K_2O.Al_2O_3.6SiO_2$	4. Corundum, Al_2O_3
5. Apatite, $Ca_4(PO_4)_2(CaF)$		5. Chromite, $FeO.Cr_2O_3$
		6. Ilmenite, $FeO.TiO_2$
		7. Hematite, Fe_2O_3

TABLE 2

A. Mechanical Disintegration	B. Chemical Decomposition
1. Erosion and denudation. Abrasion by running water, moving ice, wind.	1. Oxidation by the atmosphere.
2. Temperature effects. Alternation of heating and cooling with subsequent dilatation and contraction.	2. Hydration and dehydration.
3. Effects of plant and animal life.	3. Solution by neutral or acid waters.
	4. Action of hot gases and liquids due to volcanic activity.
	5. Deoxidation by reducing agents.
	6. Leaching out of soluble salts.

of rocks, and second, a change in their chemical properties.

II. Physical Properties of Clays

The primary effect of the weathering process is to reduce the original igneous rocks into small particles the size of which will vary greatly according to the composition and physical character of the mother rock, the predominant type of weathering, the mode of transportation and concentration. Loose sedimentary formations are classified according to sizes as given in Table 3.

TABLE 3

Name of Sediment	Size of Particle
Gravel	.20 to 2 mm
Coarse sand	2 to .2 mm
Fine sand	.2 to .02 mm
Silt	.02 to .002 mm
Clays	smaller than .002 mm

Table 3 indicates that clays are made of very small particles, so small that the majority of the grains may not be singled out under an ordinary microscope whose limit of resolution is normally of the order of .0005 mm. In order to see the particles of most clays, it is necessary to resort to the use of the ultra-microscope with dark field illumination. This instrument will permit viewing the particles' outline but may not distinguish their shape or form. Studies by means of X-rays have, however, definitely proved that the physical structure of clay particles is crystalline and plate-like. This is further indicated by numerous twinklings when viewing a dilute clay suspension under the ultra-microscope.

A corollary of the extreme division of clay particles is the enormous increase in the extent of the surface of the particles for a given unit weight of clay. The increase in surface is inversely proportional to the diameter of the particles. Thus if a cube of one centimeter edge length having a total surface of 6 cm^2 is divided into cubic particles .0001 mm in size the total surface will be 600,000 cm^2. But clay particles possess usually a porous or capillary structure and the increase in specific surface due to the extreme division of clays is even greater than the relation given above. Finely divided particles have the property of forming colloidal suspension with liquids; clays in particular will readily be suspended in water and will form a heterogeneous dispersed system called mud. Due to the great extent of the surface of the particles so dispersed, surface energies and surface forces predominate to the practically complete exclusion of chemical forces. Therefore the chemical composition of the clay particles dispersed in water is of little concern in studying the effect of added chemicals to a mud. This is extremely fortunate since many clays of greatly varying chemical compositions will react in the same manner to a given chemical.

Other physical properties enhanced by the extreme division of a compound into small particles are the rate of solution, the vapor pressure and the adsorbing properties. Of these the adsorbing properties of clay suspensions for ions and gases are of particular significance in drilling muds and will be discussed in detail in a later section.

Measurement of particle sizes: The determination of the particle sizes of clays, soils or shales is done most generally by making use of the principle of sedimentation in a suspending liquid. Assuming that all particles are spherical in shape and representing their radius by r, the gravitational force which will tend to settle each particle of radius r is given

$$F = \frac{4\pi r^3}{3}(\rho_1 - \rho_2)g \qquad (1)$$

where: g is the acceleration due to gravity

ρ_1 is the density of the particle

ρ_2 is the density of the suspending medium

In its movement of settling, the particle attains a velocity v with respect to the medium and, for a sphere, the force of friction so generated is given by Stokes' Law:

$$F' = 6\pi\eta r v \qquad (2)$$

in which η is the viscosity of the suspending medium.

Since the gravitational force F is constant and the friction force F′ increases with velocity, the velocity will attain a constant limiting value v_o where $F = F'$; from this relation may be derived Stokes' formula for sedimentation:

$$v_o = \frac{2}{9}\frac{(\rho_1 - \rho_2)g}{\eta} r^2 \qquad (3)$$

which indicates that a particle of a given size will fall with a determined velocity, which velocity increases rapidly as the particle's size increases. Therefore large particles fall more rapidly than small particles, the latter remaining in suspension for great lengths of time. It must be borne in mind that the application of Stokes' Law to the measurement of particle sizes of clay merely gives the measurement of the *equivalent spherical diameter* of the particle, i. e., the diameter of a particle of identical composition but spherical in shape which would fall at the same rate of speed.

Various methods based on the Stokes formula are in use for measuring grain size. The simplest one due to Bouyoucos[2] consists in recording the density of the suspension at predetermined intervals of time. 100 grams of the dried material are suspended in one liter of water (thoroughly mixed with a dispersing agent (NaOH) by means of an ice-cream mixer) and placed in a 1000 cc cylindrical burette. A special hydrometer graduated in percent of soil colloid is then introduced in the burette and read at various intervals of time corresponding to well defined equivalent spherical diameters according to Stokes' formula:

Time Interval	Diameter
1 minute	.07784 mm.
2 minutes	.05505
5 "	.03481
15 "	.02010
30 "	.01421
60 "	.01005
2 hours	.00710
3 "	.00560
4 "	.00502
5 "	.00450
24 "	.00205
2 days	.00145
4 "	.00102

Bouyoucos' method of particle size determination

OIL WEEKLY EDITION

BAASH ROSS News

BAASH-ROSS TOOL COMPANY, LOS ANGELES-HOUSTON-NEW YORK

A MONTHLY BULLETIN COVERING NEWS OF EQUIPMENT AND OPERATIONS IN THE PETROLEUM INDUSTRY

BAASH-ROSS EQUIPMENT TAMES WILD BLOW-OUT

SPECIAL PACKER, MADE UP AND DELIVERED IN LESS THAN SIX HOURS, SAVES WELL

Rosecrans, Calif.—One of the most spectacular and dangerous blow-outs of recent years occurred here when a drilling well got out of control while pulling pipe following a formation test.

At the time the blow-out started in the 8000-foot well, over 2000 feet of 2½" drill pipe was still in the hole. The first blow of gas was successfully shut in with the blow-out preventer, but as the pressure increased, the cellar fittings began to leak, making it necessary to flow the well until it could be killed by pumping water.

With the well apparently under control, the crew started on out of the hole. But only four more stands were set back when the gas started coming again, blowing more than 1800 feet of drill pipe completely out of the well and draping it over the rig like so much spaghetti.

Special Equipment Designed

With the well blowing at an estimated 30 million-cubic-feet-a-day rate, a call was put in to Baash-Ross for aid.

Because the rig was clogged with twisted drill pipe, the blocks and draw-works could not be used for repair work. So special packing equipment had to be designed that could be set manually. In spite of this fact, *within less than six hours* from the time the call came in an ingenious spear-type packing assembly had been designed, built and delivered to the rig—a typical example of Baash-Ross service. This packing assembly, set by means of screw-jacks, successfully brought the well under control.

A special bulletin, complete with sketches and photographs showing how this well was packed off, is available. It's valuable information to have in your files. Ask for Bulletin R-21.

Remember . . . special equipment *in a hurry* is always available from your nearest Baash-Ross shop. 24 hour service!

More than 1800 feet of twisted drill pipe in the derrick made shut-off efforts doubly difficult.

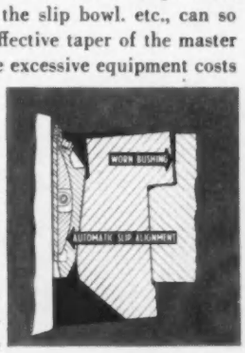
NEW WORLD DRILLING SPEED RECORD SET

Wilmington, California—Believed to have established a new world speed record for drilling and completion, Kern Drilling Company completed Harbor 2 for Sound Petroleum Corporation on December 11 after logging just 25 hours of actual drilling time.

During a single 8-hour tour from 4 P.M. to midnight, a total of 1595 feet was drilled, setting what is believed to be a new world's record. This is at the rate of 199.3 feet per hour. The hole was bottomed at 2713 feet at the end of the 25 hour elapsed run, and electrical logging, surveying, mud conditioning and running casing brought the total time for completion of the job to an even 40 hours from the time the well was spudded.

UNIFORM SLIP HOLD IS VITAL FACTOR IN LIFE OF DRILL PIPE

Field tests have shown that crimping, bottlenecking and cutting of the drill pipe are caused, in the majority of cases, by changes in the effective taper of the master bushing bore. Such factors as wear, deformation under severe loads, the presence of foreign materials in the slip bowl. etc., can so materially change the effective taper of the master bushing bore as to cause excessive equipment costs and premature drill pipe failure.



There is now an efficient remedy for this problem—Baash-Ross *Self-Aligning* Slips. These slips incorporate an *exclusive* self-aligning principle that insures a uniform full-length grip on the pipe *regardless of the condition of the master bushing bore.* Under load, the slip liners oscillate in a vertical plane, *automatically* adjusting themselves to exact alignment with surface of pipe at all times.

In addition, the unique flexible hinge construction between the two body segments insures uniform contact *around* the pipe as well. This *double* automatic adjustment thus compensates for *all* factors involved, including variations in drill pipe O. D., changes in the master bushing taper, off center positioning of the drill pipe in the table, etc.

Baash-Ross Self-Aligning Slips are light in weight, easy to set, easy to pull, and do not stick when the pipe is off-center in the table. This means *faster round trip time* in addition to *longer pipe life* and *improved operating efficiency.*

An interesting 8-page bulletin with detailed engineering drawings showing how bushing wear affects slip alignment, is available on request. Write Baash-Ross, Los Angeles.

ON THE LOOKOUT

More information on any of these items can be obtained by simply dropping a post card to Baash-Ross with your name and key numbers of those items in which you are interested.

A NEW METHOD is reported whereby the height of cement behind the well casing can be determined to insure proper water or gas shut-off. The method incorporates use of a radioactive material and gamma ray detector. (No. A-20)

BAASH-ROSS

A 216 PAGE CATALOG said to contain technical information not readily available on seamless pipe fittings has been issued recently, and will be sent without cost to those interested. (No. A-21)

BAASH-ROSS

***USING AMMONIA AND ETHYLENE** in a three-step freezing process now under development, natural gas can now be liquefied for storage. When so processed, a million cubic feet of free gas can be stored in a 10-foot diameter tank only 18 feet long, according to reports. (No. A-22)*

BAASH-ROSS

***AN INTERCHANGEABLE BLOCK** that is equally efficient as floor block, tubing block or bailing and coring block, has been developed. By eliminating need for several different blocks, it saves on equipment costs. Has 78,000 pounds working capacity, full 360° swivel action in all positions and a quick rope-threading feature.* (No. A-23)

BAASH-ROSS

A NEW DEVICE for determining sand content of drilling fluid has been introduced. Simplicity of the apparatus minimizes possibility of error in running the test as well as in making readings, it is stated. (No. A-24)

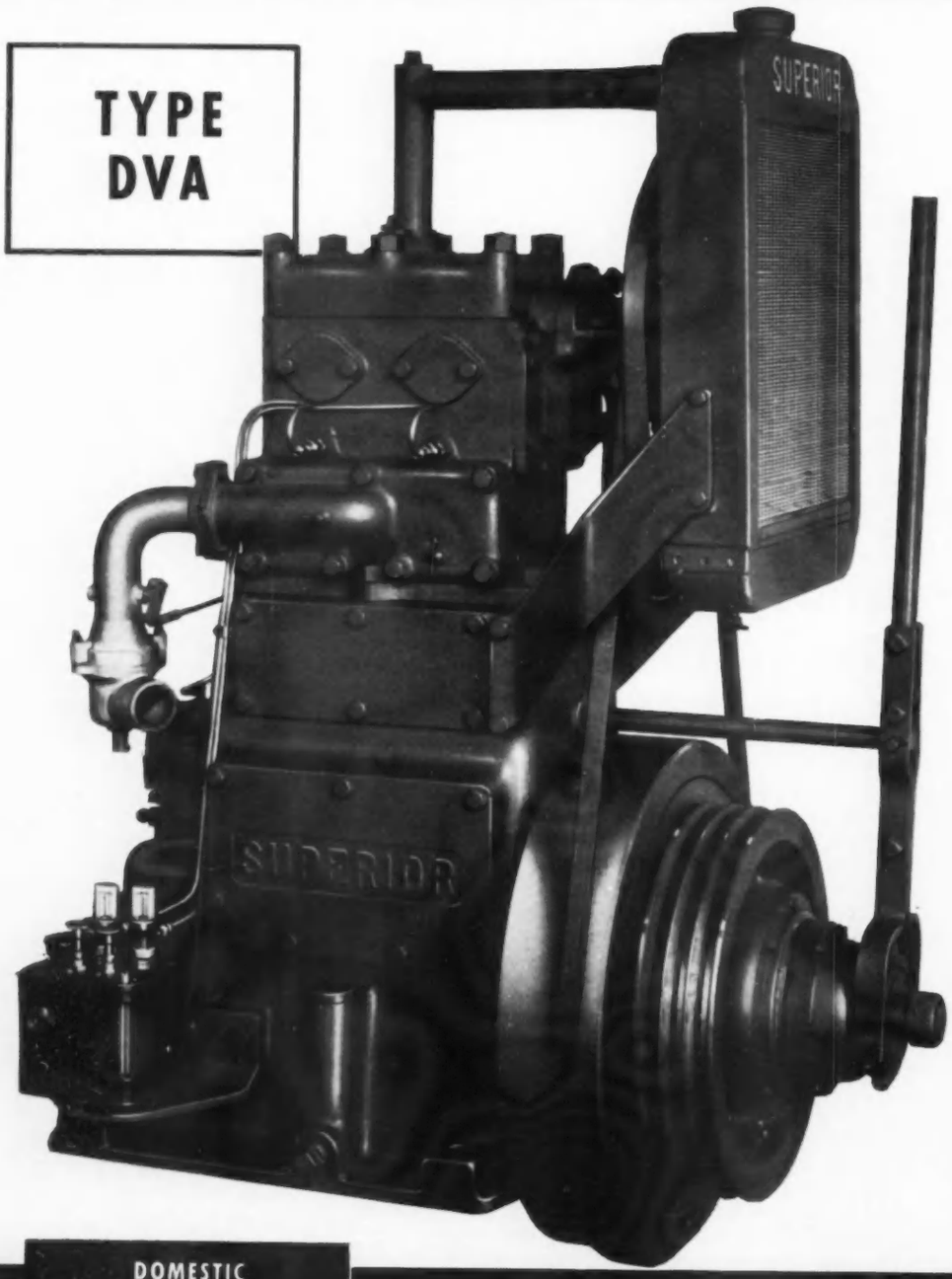
BAASH-ROSS

GLYCERINE is the latest substance to be manufactured on a commercial scale from petroleum, taking its place beside synthetic rubber as petroleum by-products important in present defense requirements.

Superior GAS ENGINES

TYPE DVA AND EA

TYPE DVA



TYPES DVA AND EA were specially designed and perfected during a period of years to meet oil field conditions. An important advantage of these simple rugged 2-cycle engines is that the pumper easily understands and keeps them in running order without extra labor.

Only half as many parts as a 4-cylinder, 4-cycle (although the number of working strokes per revolution is the same). Large handholes in crankcase provide unusual accessibility. All parts including crankshaft are removable without disturbing engine on its mounting.

The moderate speed, heavy crankshaft in roller bearings, clutch pulley with roller bearings, etc., all make for durability. Crossheads lessen wear on cylinders and allow sealing off crankcase from hot pistons to save lube oil.

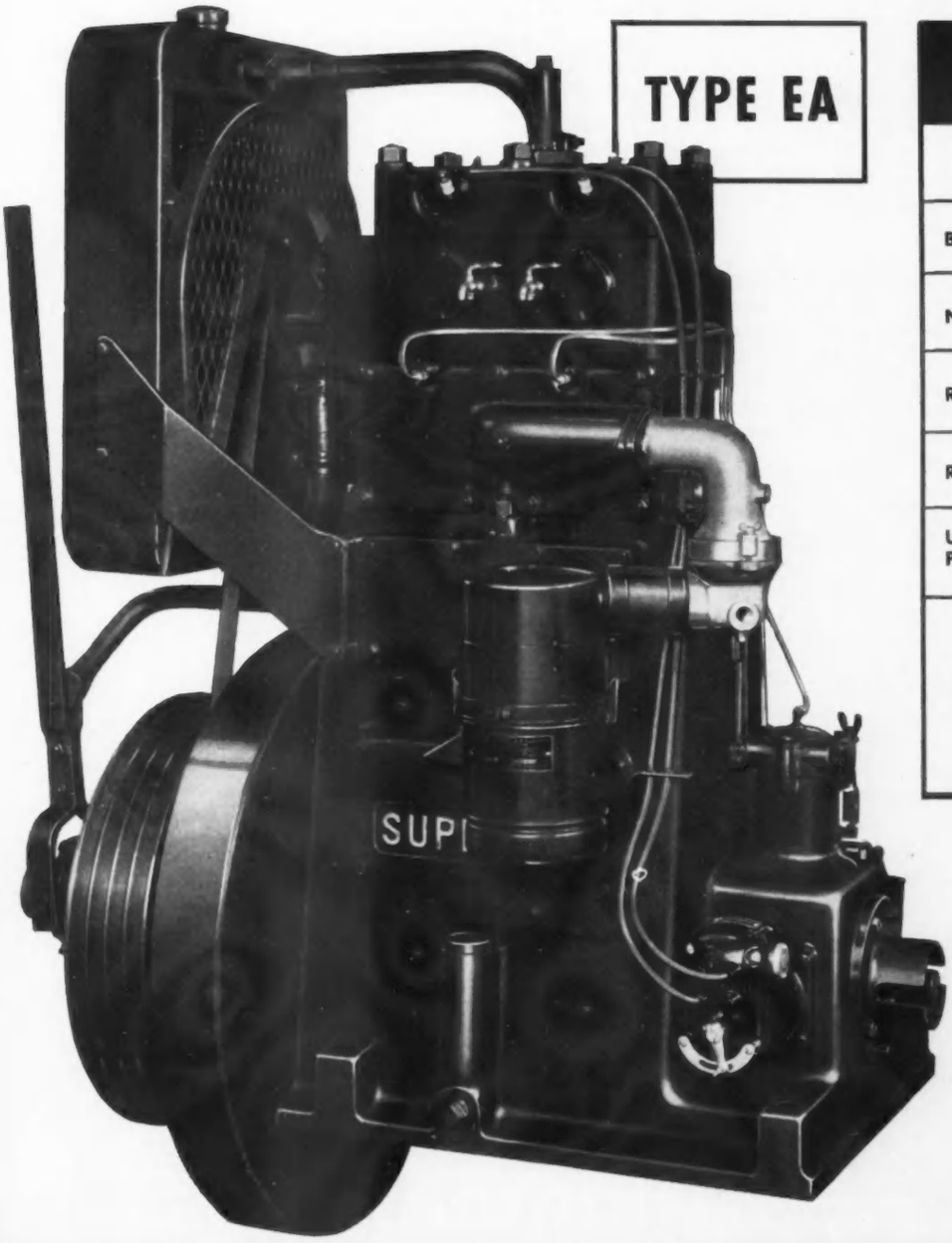
Complete with radiator and clutch for outdoor mounting on pumper. Cost little to install.

DOMESTIC
EXECUTIVE OFFICES
PITTSBURGH, PENNA.
•
GENERAL SALES OFFICE
TOLEDO, OHIO
•
DIVISION OFFICES
FT. WORTH, TEX. • TULSA, OKLA.
TORRANCE, CALIF.

THE NATIONAL

. . . for Single Well Pumpers · 5-20 H.P. Actual Loads

Economical to Operate . . . Long Life . . . Moderate First Cost



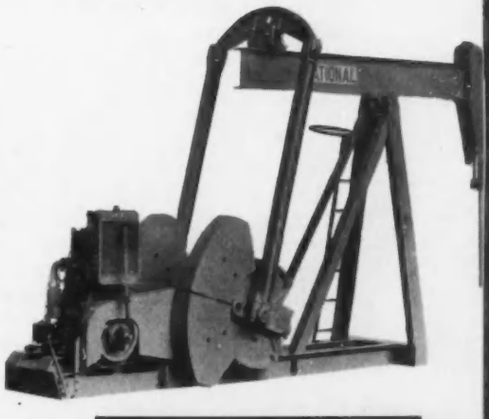
TYPE EA

RATINGS		
TYPE	**DVA**	**EA**
Bore x Stroke	4" x 5"	5" x 6"
Number of Cylinders	2	2
Rated Horsepower	10 at 700 r.p.m.	20 at 700 r.p.m.
Rated Horsepower	7 at 500 r.p.m.	14 at 500 r.p.m.
Usual Range of Pumping Speeds	400-800 r.p.m.	350-700 r.p.m.

Above horsepowers carried continuously.

Maximum horsepower curves on request.

Larger sizes up to 100 horsepower for geared powers and other service.



ONAL SUPPLY COMPANY

EXPORT

THE NATIONAL SUPPLY CORPORATION
30 ROCKEFELLER PLAZA
NEW YORK, N. Y. . . . U. S. A.

•

RIVER PLATE HOUSE
12 SO. PLACE, LONDON, E. C. 2
LIMITED LIABILITY

•

PLOESTI, ROUMANIA

•

MARACAIBO, VENEZUELA

has several disadvantages which limit its use in drilling mud studies:

1. The length of time required to separate particles of smallest size is prohibitive.

2. The method is only applicable to the study of suspensions exhibiting no gel property, which is not often the case in drilling mud studies.

Other methods of particle size determination are the turbidimetric method which makes use of the light intensity reduction by the turbid suspension (measurements are obtained by means of a photoelectric cell) or the method proposed by G. A. Loomis[3] by means of the Andreasen pipette which is similar in principle to the Bouyoucos method but in which the amount of materials, which has settled after specified periods of time is withdrawn, placed in small beakers, dried and weighed.

These last methods are subject to the same limitation as the Bouyoucos method. The most satisfactory procedure for determining the size of clay particles as well as for separating sizeable samples of clay of predetermined particle size is the supercentrifuge, such as used to separate petrolatum from lubricating oils. Certain of these apparatuses turn at a speed of 45,000 r.p.m. thereby increasing the force of gravity available for separating particles of various sizes, according to Stokes' Law, by a factor of as much as 40,000. Such separations have been performed by Reed[4] on a bentonite commonly used for drilling mud. Reed's results will be reviewed in the section of this article dealing with the physical properties of clay suspensions.

III. Chemical Properties of Clays

During the weathering process, to which the primary igneous aluminum silicates are subjected at the surface of the earth, the crystals of the rocks are not only decreased in size but chemical alteration and degradation takes place. In the main, the process consists in the reduction of the $\frac{SiO_2}{Al_2O_3}$ ratio or more generally in the reduction of the silica-sesquioxide ratio. The most active agents of chemical alteration in the earth crust are oxygen, water and carbon dioxide. By way of example the formation of Kaolin, which is believed to be generally well understood, will be given:

$$\underset{\text{(Orthoclase)}}{K_2O.Al_2O_3.6SiO_2} + H_2O + CO_2 = \underset{\text{(Kaolin)}}{Al_2O.2SiO_2.2H_2O} + 4SiO_2 + K_2CO_3 \qquad (4)$$

Similar reactions take place with the easily soluble and less soluble aluminum silicates of Table 1 whereas the practically insoluble minerals may appear as impurities in more or less large quantities depending on transportation conditions. The degree to which the primary igneous rocks are altered varies greatly with the climate of a region or more specifically with the average temperature. This may be related to Van't Hoof's rule that any reaction is always doubled with a 10° C. rise in temperature. Therefore, one would expect the silica-sesquioxide ratio of shales, clays and soils to increase from south to north. That this is actually the case has been ascertained by Mattson[5] and his results are given in Table 4.

Table 4 indicates that in tropical regions the weathering process has been carried to the point of practical elimination of silica; this process is called laterization and the resulting formations are usually

TABLE 4

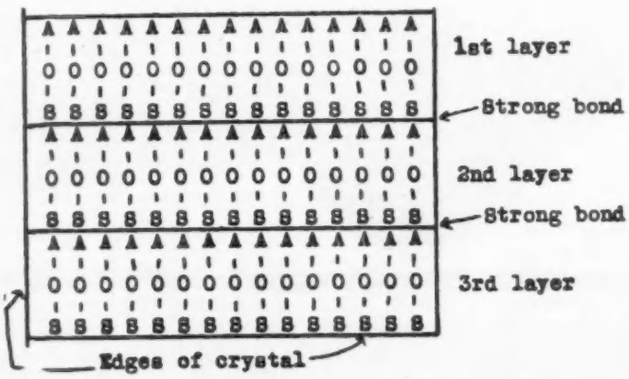
Region	$\frac{SiO_2}{Al_2O_3 + Fe_2O_3}$
Cuba	.30
Alabama	1.27
Georgia	1.33
N. Carolina	1.44
Maryland	1.61
Massachusetts	1.74
Michigan	2.93
Wisconsin	2.94

characterized by a strong red brick color due to Fe_2O_3. However, laterites are mainly composed of hydrated aluminum oxides:—diaspore: $Al_2O_3.H_2O$, bauxite: $Al_2O_3.2H_2O$ and gibbsite: $Al_2O_3.3H_2O$. To the contrary, in the northern regions, the weathering process has not been so intense and in soil science a light alteration of primary rocks is known as "podzolization." In the northern region, according to equation (4), one would also expect a large percentage of kaolin $\left(\frac{SiO_2}{Al_2O_3} = 2\right)$ to be present. Therefore, it is seen that the average composition of available clays for drilling mud manufacture varies greatly according to climatic region.

From the point of view of drilling mud manufacture, clays may be classified in two groups: the Kaolinite group and the Montmorillonite group. The formula of the principal mineral of kaolinite has already been given in equation (4). It must be borne in mind that it is an empirical formula and that very few clays will exactly be represented by such a formula. The same remark must hold true for the Montmorillonite group whose empirical formula is $Al_2O_3.4SiO_2.H_2O$. Actually, both groups are a complex mixture of aluminum silicates some of which will be given here. X-ray analysis has definitely shown for both groups of clays that they are composed of minerals whose crystal lattice is of the layer type. Alternate layers of aluminum and silicon atoms bound together by oxygen bridges are superposed to each other in order to build up a laminar crystal structure similar to mica. In the crystal structure isomorphism may take place, i.e., iron or magnesium atoms may replace aluminum atoms.

A: Kaolinite Group:

A very simplified picture of the kaolinite group may be obtained by considering its crystalline structure composed of unit cells (Al-O-Si) both superposed and placed side by side until the edges of the crystal are reached.

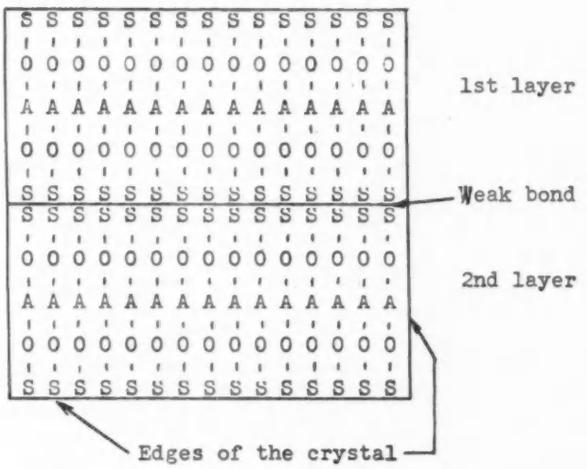


The horizontal bonds between the unit cells are very strong; so are the bonds between the various layers. Therefore, many layers can pile up on each

other and large stable crystals are easily obtained. Dispersed kaolinite may generally be seen under the microscope due to its larger particles. Associated with kaolin may be found other minerals such as halloysite, metahalloysite, nacrite, and dickite.

B: Montmorillonite Group:

The empirical formula for montmorillonite being $Al_2O_3.4SiO_2.H_2O$, for every atom of aluminum there will be two atoms of silicon; therefore the unit cell constituting the crystalline structure may be represented by (S-O-A-O-S). These unit cells placed side by side and superposed give a schematic representation of the crystalline structure of the particle:



As in the case of kaolinite, the horizontal bonds between the unit cells are very strong but, due to the similarity of the juxtaposed atoms in two layers, the bonds between layers are rather weak. This is a very important consideration in drilling mud, as montmorillonite is the principal mineral of bentonite so commonly used in drilling. The presence of weak bonds between layers of unit cells gives montmorillonite its swelling properties. The weak bonds between the layers of unit cells explain also the greater division of the particles to the point where they are no longer visible under the ordinary microscope. Associated with montmorillonite in bentonites may often be found other minerals: Beidelite: $Al_2O_3.3SiO_2.nH_2O$, Pyrophyllite: $Al_2O_3.4SiO_2.H_2O$, Nontronite: $Fe_2O_3.3SiO_2.nH_2O$. Isomorphism may again take place and one common montmorillonite mineral has the following composition: $(CaMg)O.Al_2O_3.5SiO_2.nH_2O$,

IV. Chemical Properties of Clay Suspensions

When a clay is dispersed in water the system usually is referred to as a "colloidal suspension." A colloidal suspension is a two phase system in which one material, in a very fine state of disintegration approaching but not attaining a molecular subdivision, is heterogeneously dispersed through a second. Materials in this state are distinguished by three properties:

1. A great effective surface or interface.
2. A capacity to fix solids, gases and ions of salts in solution (strong adsorption).
3. A tendency to hasten or retard chemical reactions (catalytic effect).

One of the outstanding characteristics of the colloidal complex of clay in suspension is the ability to adsorb cations which are held on the colloidal nuclei in a replaceable condition. The adsorption for cations of the colloidal clay is considerably larger than the adsorption for anions. All cations are not adsorbed to the same extent on the clay particle; monovalent cations are adsorbed according to the following scale of intensity $C_s > R_b > NH_4 > K > Na > Li$, lithium being the least strongly adsorbed of all ions. The bivalent ions are more strongly adsorbed than the monovalent ions according to the following scale of intensity $Ba > Sr > Ca > Mg$, barium being the most strongly adsorbed. Of all ions, hydrogen is the most strongly adsorbed. When found in nature clays are not devoid of adsorbed ions. Their presence is undoubtedly responsible for the variable behavior as drilling muds which is observed in clays seemingly physically alike. Before any two clays can be compared from the point of view of rotary mud making it is necessary to know what kind of irons are adsorbed on the clay and in what amount. In other words it is necessary to purify the clay of all its adsorbed ions. This purification may be done by electrodialysis, an operation which consists in placing the clay suspension between two membranes, the pores of which are permeable to electrolytes but not to particles of colloidal size or larger. The purification of clays by electrodialysis was first introduced by Mattson[5] in the study of soils. It was thereafter used in the ceramic industry by Henry and Taylor[6] and is now finding application in the study of raw clays as drilling mud material. An electrodialysis cell of the Mattson type is represented in Figure 1 in which 1 and 2 represent the semi-permeable membranes. Compartments I and II are provided with a measured quantity of distilled water whereas Compartment III receives the clay suspension to be purified. A source of D. C. potential C is applied between the two electrodes E_1 and E_2. Due to the fact that when a clay is placed in suspension in water some of the adsorbed ions dissociate, an electric current will be established through the cell and the anions will move to E_1 thereby rendering the water in Compartment I acid and the cations will move to E_2 thereby rendering the water in Compartment III basic. As the electrodialysis proceeds, the equilib-

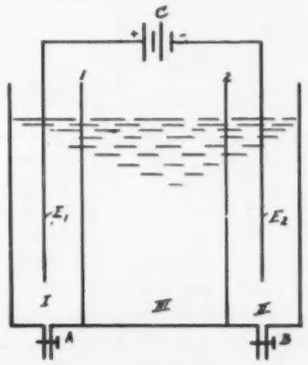


FIGURE 1
Electrodialysis Cell

rium in Compartment III between the clay particles in suspension and the dissociated ions is disturbed, therefore more ions will be liberated from the clay particle. The operation must in general last about 24 hours before the clay is relatively free from ions except that the clay will now be saturated with hydroxyl (OH^-) and hydrogen (H^+) ions. The purified clay so obtained is known as *hydrogen clay* or *electrodialized clay*, conveniently represented by H —

Clay — OH. Solutions may be withdrawn from compartments I and II by opening cocks A and B. The qualitative and quantitative analysis of the solutions will indicate the respective amount of each ion on the original clay. This information will serve to indicate the degree of saturation of the raw clay. The hydrogen clay when dispersed in distilled water, will give an acid suspension. The higher the $\frac{SiO_2}{Al_2O_3+F_2O_3}$ ratio in the clay the higher the degree of acidity or the higher the hydrogen ion concentration. This is expressed conveniently by means of the pH scale. In passing it is well to remember that the figures of the pH scale which range from 1 to 14 represent the logarithms of the reciprocal of the hydrogen ion concentration. Therefore $pH = 1$ represents the largest concentration of H^+, or $1 = \log \frac{1}{[H^+]}$ or $[H^+] = \frac{1}{10}$ whereas $pH = 14$ gives $[H^+] = \frac{1}{10^{14}}$. Essentially, the pH is a representation of the tendency of a chemical to dissociate as an acid or as a base. The pH values from 7 to 14 indicate that the hydroxyl ions are in excess or that the chemical has a tendency to dissociate as a base. It is well to bear in mind that the pH scale does not give a measurement of the quantity of base or acid present in the solution but merely of the intensity of the acid or base. A parallel may be found in heat measurements in which a measurement of the temperature is analogous to the pH measurement and the measurement of the number of calories or B.T.U. present is analogous to the titration of a liquid for the quantity of acid or base. Like temperature therefore the pH is an intensity factor, and likewise it is often the controlling factor of numerous reactions.

The hydrogen clay complex, OH-Clay-H in suspension contains more dissociated hydrogen ions (H^+) than hydroxyl ions (OH^-). Therefore the clay particle in suspension assumes a negative charge and the measured pH is acid; this value is called the "ultimate pH" of the clay. It indicates that electrodialyzed clay has a strong tendency to dissociate as an acid. This acid is susceptible of being titrated but, unlike the titration of strong acids, the end point or neutralization point is somewhat indefinite. One could titrate the H-Clay-OH suspension to a pH = 7 or to the saturation point, that is, to a point marked by an inflection point on the titration curve obtained when plotting the milliequivalents of the titrating hydroxide against the pH of the solution. *(Rem:* One milliequivalent of a chemical compound = a number of grams of that chemical equal to its molecular weight $\times 10^{-3}$. For NaOH, 1 me/NaOH = .040 gr. NaOH). A typical titration curve of a clay is given in Fig. 2 on which the ultimate pH (pH_μ) and the saturation capacity of the clay are indicated. The reaction which takes place when adding NaOH to a hydrogen clay suspension may be represented as follows:

$$H—Clay—OH + NaOH = Na—Clay—OH + H_2O \quad (5)$$

After the saturation capacity of the clay is reached by the addition of NaOH, the pH of the solution increases rapidly, indicating that no more ions are taken up by the clay. The saturation capacity is also called the *Base Binding Capacity*. Knowing the quantity of base on the original clay by electrodialysis and the saturation capacity from the titration curve, the *degree of saturation* of the clay may be computed.

One important characteristic of the absorbed ions on the clay in suspension is that they are exchangeable. This property is illustrated easily by the experiment consisting of filtering a solution of potassium chloride through a bed of clay. The filterating liquid is practically devoid of potassium ions whereas the chloride ions, less easily adsorbed, are still present in the filtrate at substantially the same concentration. Further, calcium ions are now present in the filtrate which have been liberated from the clay particles by potassium ions. This phenomenon is known under the name of *Base Exchange* because the positive ions exhibit it to a larger degree than the negative ions which are less strongly adsorbed. Base exchange may be represented by the following relation when starting with hydrogen-clay:

$$H—Clay—OH + NaOH = Na—Clay—OH + H_2O \quad (6)$$

and when starting with a calcium-clay by:

$$Ca—Clay—OH + 2NaOH = Na_2—Clay—OH + Ca(OH)_2 \quad (7)$$

In relation (7) it is necessary that the sodium hydroxide be added in excess in order to displace the reaction to the right since the calcium clay is not strongly dissociated.

When hydrogen clay is added to a neutral salt solution in distilled water, more complex phenomena occur which have been investigated by Mattson [7]. He defines as the *pH of exchange neutrality* of a clay suspension, the pH which is unaffected by the addition of a neutral salt. At this point the clay exchanges an equal number of OH and H ions for the anions and cations of the salt, according to the equation:

$$H—Clay—OH + NaCl = Na—Clay—Cl + H_2O \quad (8)$$

which reaction involves no change in pH.

If hydrogen clay is added to a salt solution whose

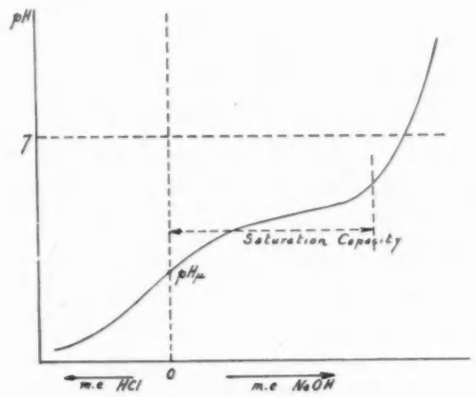


FIGURE 2
Variations of pH of a suspension of H-Clay-OH in distilled water with addition of acid and base.

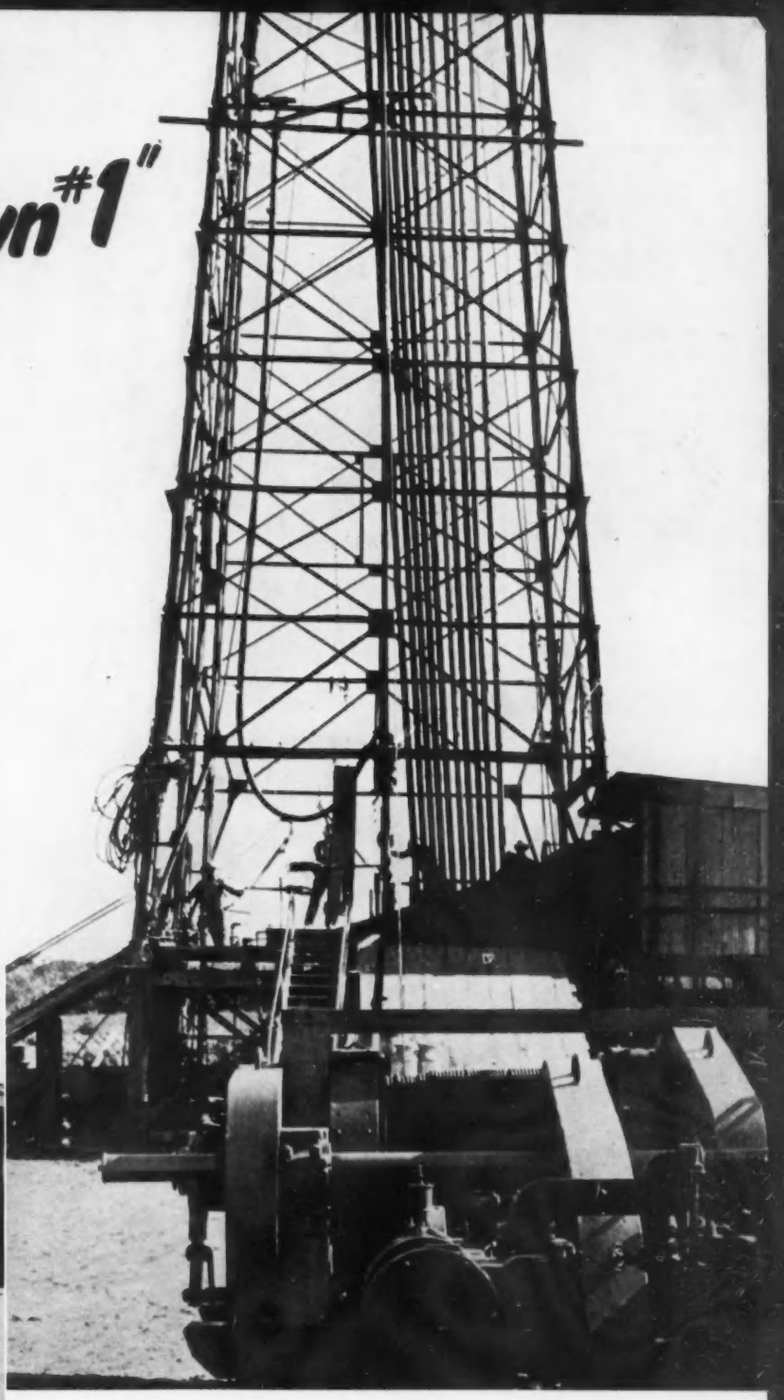
pH lies above the point of exchange neutrality (E.N.), a displacement of the H ions by the cations of the solution of salt will predominate, resulting in a lowering of the pH thereby rendering the solution more acid (*Exchange Acidity*) according to the following equation:

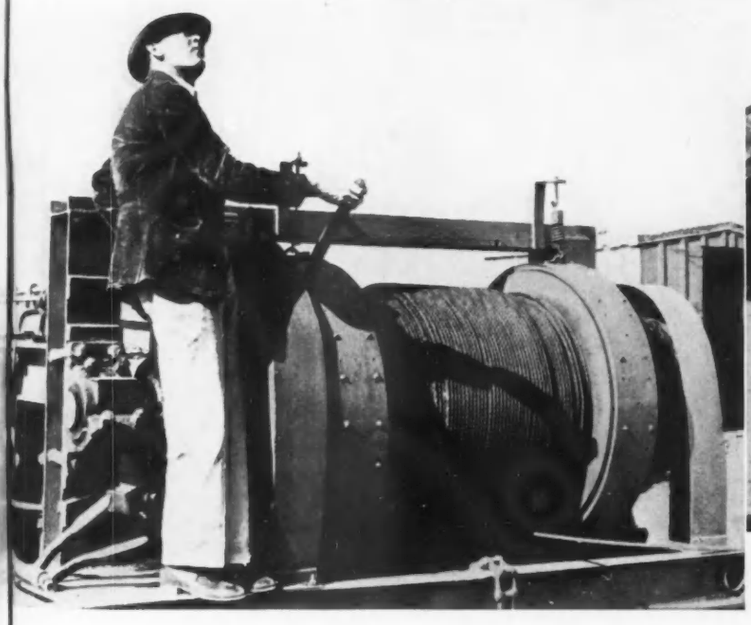
$$H—Clay—OH + NaCl = Na—Clay—OH + HCl \quad (9)$$

In this operation, equation (6) will also take place particularly at pH higher than the equiionic point E.I. represented on Fig. 3. The *equiionic point* of a solution is the pH which remains unchanged by the

How they Cored the "Minnie Brown #1"

. . . . . in corrosive brine-and-sodium mud, through 5,000 feet of heaving shale





Many records were broken at Agua Dulce, Texas, when the Minnie Brown No. 1 was carried down to 13,728 feet. The third deepest well in the world, 5,000 feet of the depth were drilled through heaving shale.

To combat this shale condition (the thickest section ever encountered in drilling) it was necessary to use a special mud which contained two very corrosive agents: sodium-silicate and brine.

Therefore, in choosing coring line for the Minnie Brown, two principal factors had to be considered: The fatigue stress resulting from great depth and the corrosive action resulting from the special mud.

Bethanized coring line was chosen because it combines the strength, toughness and endurance of bright uncoated rope with a vise-tight coating of 99.9+ per cent pure zinc.

In five months, this bethanized line made 77 round trips into the well. It was intermittently exposed to the corrosive mud and to the bleaching action of the sun. In addition, the bethanized line was subjected to abrasion in the 2½-mile-deep hole, and to repeated bending stresses on the drum.

What happened? Bethanized coring line set a world's record by lifting the deepest cores ever handled by a wire line core barrel—starting at 10,676 feet and working down to the bottom of the well. After completion of the hole, the bethanized line showed practically no wear, no lengthening, and had retained its bright zinc coating.

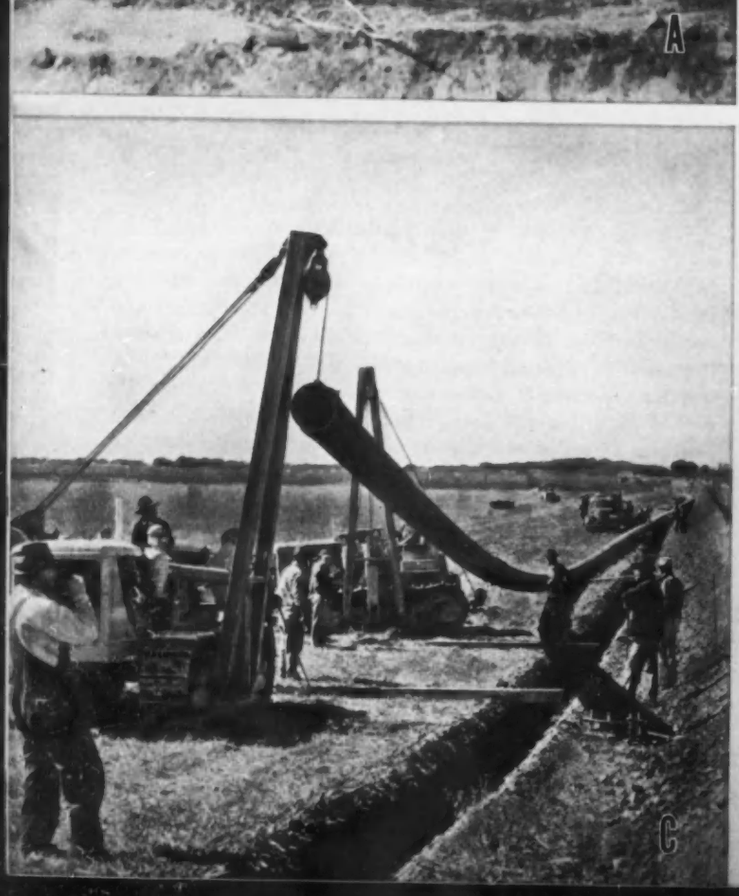
On the other hand, a 1000-foot length of ordinary zinc-coated rope which had been spliced to the bethanized line below the 12,000-foot level, showed considerable corrosion, with rust spots and loss of coating.

If you've got a coring line problem, why not follow the example of the Minnie Brown? Use bethanized rope. It pays.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

A MILE A DAY OF 2



F20" O.D. ...with "Caterpillar" Diesels!

WHEN you've got "Caterpillar" Diesel Tractors handling *every phase* of a pipe-laying job — from clearing to clean-up — there's not much chance of a bottle-neck anywhere along the line slowing down your progress!

Because these machines are built to handle pipe efficiently ... and *dependably*. Built to stand up and go under heavy loads, 24 hours a day if necessary. And backing them up, there's always "Caterpillar" service "right around the corner"!

Those are some of the reasons "Caterpillar" Diesel Tractors get the big pipe-line jobs. Take this one right here, for instance: a hundred miles of 20-inch O.D. being laid from Geneseo to Belvidere, Illinois, by Dempsey-Wilson for the Natural Gas Pipe Line Company of America. A dozen "Caterpillar" track-type Tractors are on the job — *all over the job:* from the stringing crew to the fence crew. And in spite of the size and weight of the pipe, the line moves along a mile a day!

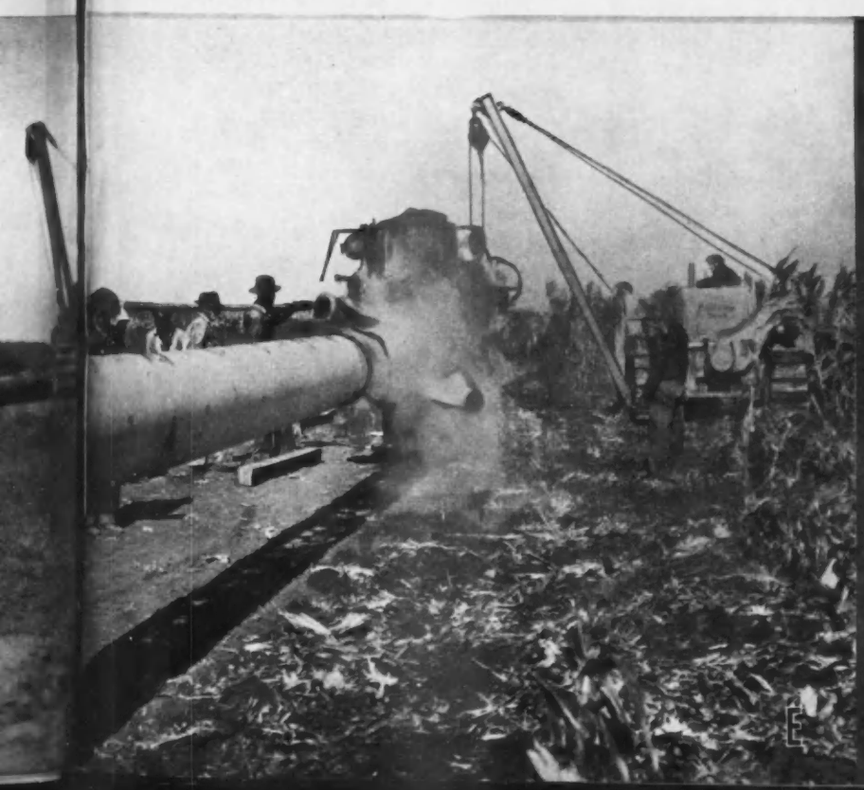
You've got what you need, when you've got "Caterpillar" Diesel: power for heavy handling, stamina for steady handling!

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

LOY WILSON SAYS... "All our 'Caterpillar' track-type Tractors are doing a job for us — and our 'Caterpillar' Diesel D7s are the fastest stepping, hardest working pipe-line machines we've ever seen. The fast reverse speed steps up the whole job and the snap of the engine in taking up a load is another time-saving item. The fuel-economy is a real item, too, but that wouldn't mean a thing if performance didn't go with it. These D7s perform!"

CATERPILLAR *DIESEL* ENGINES AND ELECTRIC SETS • TRACK-TYPE TRACTORS • ROAD MACHINERY

REG. U.S. PAT. OFF.



A CLEARING. A handy, fast, economical worker clearing off grade and berm—making level, easy going for the ditcher. This is the Dempsey-Wilson Company's "Caterpillar" Diesel D4 Tractor equipped with a Traxcavator. It uses less than one gallon of low-priced fuel an hour!

B STABBING AND JOINING. The 20" O. D. pipe goes into place with a "Caterpillar" Diesel D4 Tractor equipped with a Trackson side-boom. Quick response to clutch and lever and easy maneuverability count here!

C COLD BENDS. Watch that 20" O. D. take the shape Dempsey-Wilson want it to have. Real power needed for cold-bending pipe this size. But a "Caterpillar" Diesel D7 Tractor raises the end, while another holds the pipe down, and the job is done!

D BRINGING UP THE DOPE POT. There's lots of work on the line for this R2—one of the smaller size "Caterpillar" track-type Tractors. Dempsey-Wilson have two and use them as roustabouts. When they aren't keeping the dope pots stepping, you'll see these two small tractors spotting equipment and jumping in on all the odd jobs that have to be done to maintain the fast schedule of a mile of this 20" O. D. pipe a day.

E DOPING AND WRAPPING. Another "Caterpillar" D7. Equipped with a Trackson sideboom, it cradles the 20" O. D. for the doping and wrapping machine.

• *Pipe-line equipment is now available for five models of "Caterpillar" track-type Tractors: R4, D4, R6, D6 and D8.*

addition of hydrogen clay. Between the point of Exchange Neutrality and the Equiionic Point equation 9 takes place as well as the *Acid Exchange* equation:

$$H—Clay—OH + HCl = H—Clay—Cl + H_2O \qquad (10)$$

This equation will particularly occur with clay of low $\frac{SiO_2}{Al_2O_3}$ ratio. Below the point of Exchange Neutrality the following reaction is obtained besides that of Acid Exchange (10):

$$H—Clay—OH + NaCl = H—Clay—OH + NaOH \qquad (11)$$

which is the equation of *Exchange Neutrality*. There-

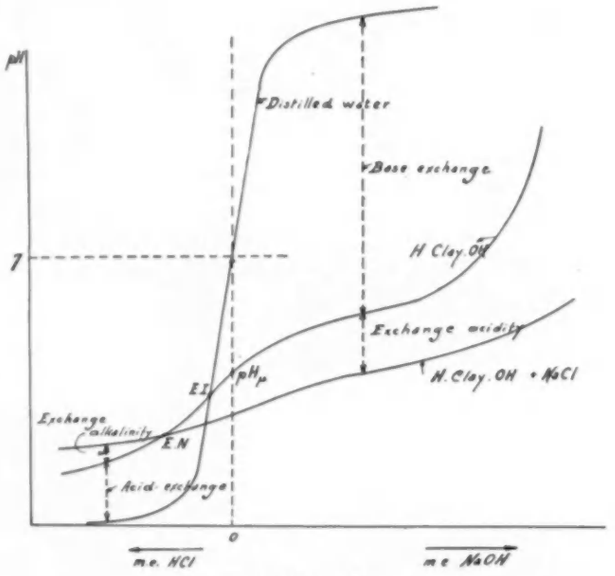


FIGURE 3
Variations of pH of a suspension of H-Clay-OH in distilled water with addition of a neutral salt.

fore below the point E.N. the solution becomes alkaline for two reasons, between E.N. and E.I. the reactions tend to compensate whereas above E.I. the solution becomes more acid for two reasons. These reactions are important in drilling mud problems as drilling muds are normally operating on the alkaline side (pH = 9 to 11). If the mud encounters a strong flow of salt water, the mud becomes immediately less alkaline and may even become acid and therefore very corrosive to the equipment.

As already mentioned above, when a clay is brought in suspension in water, the clay is hydrolyzed and some of the adsorbed ions are dissociated and enter the suspending liquid. Since the adsorbed cations are normally in excess of the anions, the clay particles assumes a negative electric charge. That it is so, may be observed by placing the suspension in an electrophoresis cell, or a cell to which is applied a D.C. potential and susceptible of being placed under a microscope. The clay particle can be seen to move toward the positive electrode. Knowing the speed at which the particle travels, the potential applied to the cell and the viscosity of the medium, the charge of the particle may be calculated. Another indication of the magnitude of the electric charge on the clay particle is the pH, since the pH is an indirect measure of the degree of dissociation of the absorbed ions.

However when clay is brought into suspension, not all the adsorbed ions are dissociated; Mattson has shown that in a clay with a saturation capacity of 80 me/100 gr. of clay, the dissociated ions were less than .2% of the total number of ions present on the particles when saturated. This points out to the designation sometimes given clay suspensions that they are *"buffered colloidal electrolytes."* The tremendous buffering effect of colloidal clay is explained by assuming that, at saturation, the porous clay structure is penetrated by the ions. Due to their similarity with electrolytes, clay suspensions are the object of similar reactions. Their degree of dissociation may be measured by electric conductivity or may be suppressed by *common ion effect*: i.e., if a clay dissociates Na^+ ions in suspension, an added excess of Na^+ ions will reduce this dissociation. If one knows the degree of saturation of a clay and the charge of the particle by measuring the speed of travel of a clay particle in an electrophoresis cell a dissociation constant for the clay may be calculated. Clay particles in suspension in water are *amphoteric*, i.e., they are capable of dissociating as an acid or as a base, but this will depend on the chemical composition of the clay as well as of the suspending liquid. As already seen, normally electrodialyzed clay will dissociate as an acid when in suspension in distilled water according to:

$$H—Clay—OH \rightarrow Clay—OH^- + H^+ \qquad (12)$$

However, if the silica-sesquioxide ratio is high there may be an excess of OH^- ions on the particle and it will dissociate as a base according to:

$$H—Clay—OH \rightarrow H—Clay^+ + H^- \qquad (13)$$

this time rendering the clay particle positive. Under a different set of conditions, it is quite possible that H^+ ions and OH^- ions will dissociate in equal amount giving rise to the *iso-electric dissociation:*

$$H—Clay—OH \rightarrow H—Clay—OH + OH^- + H^+ \qquad (14)$$

This time the particle is not affected by an electric charge and will not move in a suspension to which is applied an electric current. Under the influence of the electric charges assumed by the clay particles through dissociation, the particles are animated of a continuous and random movement of oscillation called the *Brownian Movement*. This is explained as the result of attractions due to the law of mass action and to repulsions due to the fact that the clay particles are of like electrical charges. Many of the physical properties of clay suspensions are carried out through the medium of the Brownian Movement as will be seen in the following section.

REFERENCES

[1] Clarke, F. W., "The Data of Geochemistry," U. S. Geol. Survey, Bull. 616, 481 (1916).

[2] Bouyoucos, G. J. "The Hydrometer as a New and Rapid Method for Determining the Colloidal Content of Soils." Soil Science 23, 319 (1927).

[3] Loomis, G. A., "Grain Size of Clays as Determined by the Andreasen Pipette." J. of Am. Ceram. Soc. 21 (11) 393 (1938).

[4] Reed, C. E., "Recent Advances in Knowledge of the Colloidal Properties of Clay Suspensions and Gels." Petroleum Development and Technology, 1938, pp. 240-262.

[5] Mattson, S. E., "Electrodialysis of Colloidal Soil Material and Exchangeable Bases." Jour. Agric. Research 33, 553-67 (1926).

[6] Henry, E. C., and Taylor, N. W., "Acid and Base Binding Capacities and Viscosity Relation in Certain Whiteware Clays."—Journ. Am. Ceramic Soc. 21, 5 May, 1938.

[7] Mattson, S. E., "The Laws of Soil Colloid Behavior—Neutral Salt Effect and Amphoteric Points of Soils." Soil Science 44 (2) 161 (1937).

Part 2 of this article will appear in an early issue.

Well Completions This Year Run Below 1940 Curve

By L. J. LOGAN, Associate Editor

IN line with indications previously discussed in these columns in December and January, drilling activity in the United States actually has been cut down considerably in early 1941, although various circumstances point to the possibility that development may accelerate the latter part of the year.

Wells were completed in the United States in January, 1941, at the average rate of 489 per week, or 69.8 per day, as 1955 tests were finished in the 4 weeks ended January 25.

Those results indicated a decrease of approximately 5 percent from revised averages of December, when 2578 wells were completed in the 5 weeks ended December 28, equivalent to 516 weekly or 73.7 daily.

The December-to-January curtailment was not at all unusual, as seasonal and other factors frequently result in somewhat fewer completions in January than in the previous month. In every year back to and including 1937, for example, January accounted for fewer new wells than the immediately preceding December. In January of last year the decrease was larger than usual (15 percent) because that month compared with exceptionally active December, 1939.

In reflection of the anticipated trend of 1941 completions below the 1940 trend, the new wells of January, this year, were approximately 13 percent less numerous than those of January, last year, on a weekly or daily average basis. For in the 5 weeks ended January 27, 1940, there were 2817 wells completed in the United States, equivalent to 563 weekly or 80.5 daily.

So far, therefore, actual results have accorded with the indicated probabilities as set forth in THE OIL WEEKLY's annual forecast of drilling, published January 27, 1941, pages 55 to 57. In that prognostication it was predicted that 28,535 new wells would be completed in 1941, a decrease of 1375 wells, or 4.6 percent, from the number reported for 1940. But it was stated in the forecast that development likely would be relatively more aggresive in the latter half of the year than in the initial half.

Various factors are responsible for the retardation of drilling this year. Chief among them, probably, is the disturbing effect of the European war, which has curtailed foreign demand for American oil.

The war has affected drilling both directly and indirectly. By reducing exports of petroleum and petroleum products from the United States, it has adversely affected the markets for both crude and refined oils; although the loss of foreign business may have been partially compensated marketwise by the stimulation of domestic consumption.

Moreover, some of the larger American oil companies which operate in Europe have been forced by the war to conserve capital, as they have sustained through the conflict important losses of both trade and properties.

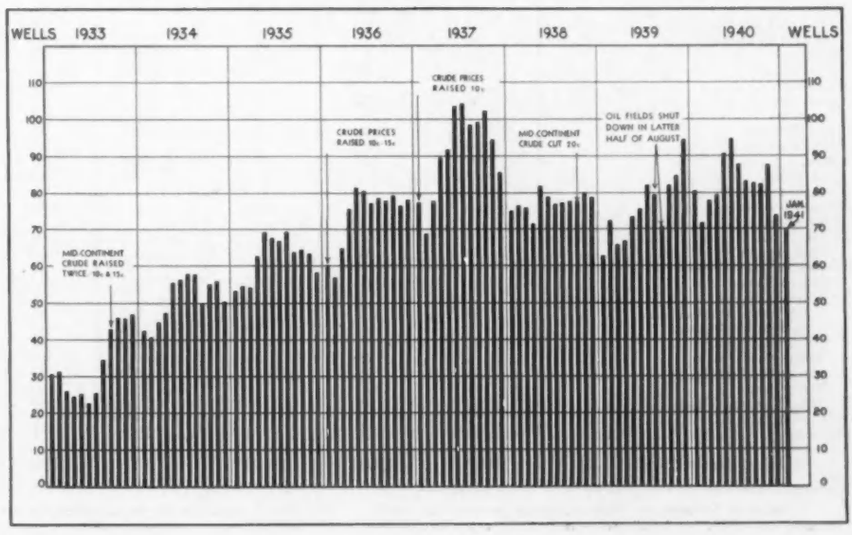
Indirectly, the war probably will tend to restrict drilling this year by causing or threatening to cause, through the national defense program, higher taxes, higher costs of materials and equipment, and higher labor costs.

It is indicated that high rates of industrial and commercial activity in the United States in 1941 will boost total demand for petroleum to new high levels, in the face of probable further losses of export business. And the large demand naturally will tend to bolster drilling activity, particularly in areas yielding crudes desirable for making products in extraordinary demand. Drilling may be expected to be brisk, for example, in areas producing crudes suitable for manufacture of lubricants, asphalt, and heavy fuel oils, as large demand for those products is anticipated.

For the country as a whole, however, the gain in demand for petroleum in 1941 is not expected to constitute sufficient incentive to drilling to outweigh the retarding effects of the war.

In connection with the relation between demand for oil and the drilling of new wells, it is contended in some quarters that a further gain in demand would not necessarily call for increased or sustained drilling, as the country

Average Daily Well Completions in U. S., by Months



at present has an all-time record number of oil wells on production, with output of many wells stringently restricted. It is asserted further, that in recent years the number of producing oil wells has increased continuously and that the increment probably has been greater than justified by the concurrent expansion of market demand. In some states, consequently, it is stated, allowable production per well has progressively decreased until a part of the incentive to drill new wells has been taken away.

These statements are beyond much controversy in so far as some states are concerned. Texas producers in particular have suffered and still are suffering, at least as regards immediate income, from over-drilling, and the resultant diminution of per well allowables. And the same may be said for producers in California, New Mexico, and Oklahoma. For in those states, the number of producing wells has steadily increased in recent years out of proportion to gains in demand for crude from those states, with the result that allowable production per well has steadily diminished.

For the United States as a whole, however, there has not been for two years any decrease in the average daily production per well. On the contrary, believe it or not, there were in 1939 and 1940 increases in output per well, in the face of a continuously increasing number of oil wells on production; the explanation being that production has expanded relatively more sharply than the number of producing wells, although some of the 1940 production went to storage. In 1937 the producing oil wells of the United States yielded on the average 9.8 barrels daily per well, with production high in response to what was then record-breaking demand. In 1938, demand slumped and production was curtailed, while the number of producing wells continued to increase, with the result that average output per well came down to 9.1 barrels daily. In 1939, demand improved, and despite a further steady addition of producing wells, output per well rose to 9.2 barrels daily. In 1940, total demand for petroleum increased 2 percent and crude oil production rose 6 percent; and although the number of producing wells was boosted to a new all time high, in a 3 percent increase, the wells of the country had average daily output of 9.6 barrels per well, or nearly as much as in the boom year 1937, according to preliminary data, published in these columns January 27, 1941, page 70. States in which output per well increased in 1939 and 1940 included Arkansas, Illinois, Indiana, Kansas, (Louisiana in 1940), Mississippi, Montana, Nebraska, and Wyoming, while little or no change was shown in the stripper well states of New York, Ohio, Pennsylvania, and West Virginia.

Daily average output per well went down in California from 43 barrels in 1939 to 41.2 barrels in 1940; in New Mexico from 38.8 barrels daily per well in 1939 to 34.2 in 1940; in Oklahoma from 8.0 to 7.8 barrels; and in Texas from 15.1 to 14.5 barrels daily. And those decreases doubtless were largely responsible for the fact that drilling was relatively less active in those states than in the country as a whole in 1940. While United States completions were up 11 percent in 1940, those in California were down 6 percent, those in New Mexico were off 4 percent, and gains in Oklahoma and Texas were only around 3 percent.

Well Completions Off Considerably in First Month of New Year

STATE OR DISTRICT	WELLS COMPLETED				DETAILS OF 1941 DRILLING				
	Year Ago *January, 1940	Month Ago †December, 1940	Now ‡January, 1941	% Change in Weekly Average, from January, 1940, to January, 1941	New Wells Drilled for Oil and Gas			§Miscellaneous Completions	Initial Oil Production (New Wells and Workovers)
					Oil	Gas	Dry		
Alabama	....	1	....	.....	....	....	....	.....	.....
Arkansas	19	13	14	— 7.9	7	....	7	.....	1,255
California	88	66	86	— 22.2	79	2	5	.....	44,011
Colorado	2	2	....	.....	....	....	....	.....	.....
Illinois	336	318	239	— 11.2	181	1	51	6	39,184
Indiana	42	58	35	+ 3.6	16	2	9	8	2,901
Kansas	142	180	142	+ 25.0	91	1	37	13	127,615
Kentucky	32	29	19	— 26.7	7	1	11	.....	327
Louisiana	147	151	99	— 16.0	64	9	26	.....	16,845
North Louisiana	51	62	38	— 6.9	24	6	8	.....	3,990
South Louisiana	96	89	61	— 20.8	40	3	18	.....	12,855
Michigan	134	77	54	— 49.6	22	2	30	.....	3,885
Mississippi	16	13	11	— 15.6	7	....	4	.....	4,335
Missouri	....	9	....	.....	....	....	....	.....	.....
Montana	17	27	8	— 41.2	8	....	....	.....	1,099
Nebraska	....	14	12	.....	4	....	8	.....	1,018
New Mexico	82	37	21	— 68.3	18	1	2	.....	5,670
New York	106	61	43	— 49.5	19	1	....	23	113
Ohio	106	147	105	+ 23.6	18	52	29	6	116
Oklahoma	182	212	172	+ 18.1	86	10	48	28	38,851
Oregon	....	....	....	.....	....	....	....	.....	.....
Pennsylvania	343	255	238	— 13.3	102	34	12	90	171
Tennessee	5	3	....	.....	....	....	....	.....	.....
Texas	928	794	593	— 20.2	440	16	135	2	282,390
East Texas Field	26	41	51	+ 59.1	50	....	....	1	93,742
Rest of East Texas	24	31	22	+ 14.6	11	2	8	1	7,422
North Texas	221	173	124	— 29.9	87	....	37	.....	35,051
South Texas	238	203	155	— 18.7	91	8	56	.....	35,094
Corpus Christi Area	109	102	82	— 6.0	56	4	22	.....	28,649
San Antonio Area	24	20	24	+ 25.0	13	....	11	.....	1,839
Laredo Area	105	81	49	— 39.0	22	4	23	.....	4,606
Texas Gulf Coast	114	79	54	— 40.8	42	4	8	.....	13,312
Texas Panhandle	54	49	32	— 25.9	30	....	2	.....	5,227
West Texas	193	172	119	— 23.1	110	....	9	.....	88,562
West Central Texas	58	46	36	— 22.4	19	2	15	.....	3,980
West Virginia	72	95	60	+ 4.2	6	45	9	.....	50
Wyoming	18	16	4	— 72.2	1	....	2	1	70
United States Total	2,817	2,578	1,955	— 13.1	1,176	177	425	177	569,960

* Period of 5 weeks, or 35 days, ended January 27, 1940. † Period of 5 weeks, or 35 days, ended December 28, 1940. ‡ Period of 4 weeks, or 28 days, ended January 25, 1941. § Old wells deepened, water-intake, gas-input, and salt water disposal wells.

Similarly, while United States completions were 13 percent lower in January, 1941, than in January, 1940, there were decreases of 22 percent in California, 68 percent in New Mexico, and 20 percent in Texas. The fact that Oklahoma for January showed an 18 percent gain in completions reflected the change in that state's situation following commencement of the decline of Illinois production, demand for Oklahoma crude being on the uptrend and the incentive for drilling being consequently stronger.

Kansas responded to the Illinois decline even more promptly than Oklahoma, having experienced a 37 percent increase in drilling in 1940; and completions in the state in January, 1941, were 25 percent more numerous, on a daily average basis, than in January, 1940.

Meanwhile, Illinois is fulfilling expectations by showing decreased development, completions of the initial month of this year having been 11 percent under the 1940 curve, in the absence of proved acreage that could be developed.

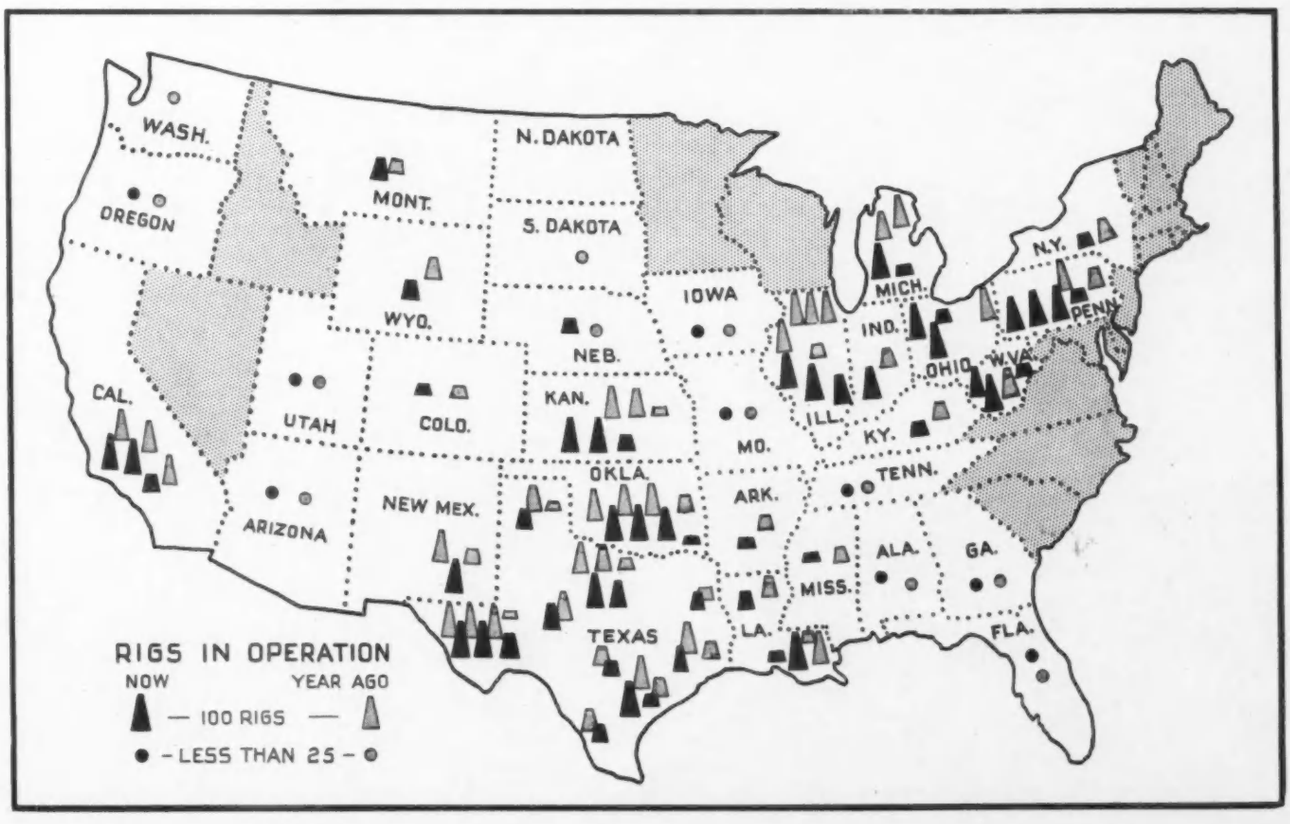
Michigan drilling similarly languishes for lack of new fields, being only half as extensive as at this time last year.

Fewer Drilling Rigs Active on February 1 Than on January 1

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shut Down)				DETAILS OF FEBRUARY 1, 1941 FIELD ACTIVITY					
					Rigs in Operation			Prelim. Activity		
	Year Ago (Feb. 1, 1940)	Month Ago (Jan. 1, 1941)	Now (Feb. 1, 1941)	Percent Change From Year Ago	Drilling	Rigs Up	Shut Down	Derricks	Locations	Total Operations
Alabama	3	5	4	+ 33.3	....	....	4	...	...	4
Arizona	8	7	7	— 12.5	1	...	6	1	...	8
Arkansas	32	26	27	— 15.6	15	2	10	2	3	32
California	308	268	255	— 17.2	149	53	53	...	67	322
Colorado	27	30	31	+ 14.8	10	1	20	...	...	31
Florida	3	3	2	— 33.3	....	....	2	...	...	2
Georgia	1	2	2	+ 100.0	....	....	2	...	...	2
Illinois	447	339	293	— 34.5	224	25	44	10	31	334
Indiana	76	85	99	+ 30.3	38	6	55	6	35	140
Iowa	2	3	3	+ 50.0	1	...	2	...	...	3
Kansas	219	251	237	+ 8.2	190	22	25	19	13	269
Kentucky	59	51	48	— 18.6	30	3	15	...	5	53
Louisiana	210	218	190	— 95.2	153	17	20	13	94	297
North Louisiana	70	79	63	— 10.0	41	3	19	2	9	74
South Louisiana	140	139	127	— 9.3	112	14	1	11	85	223
Michigan	200	122	122	— 39.0	77	18	27	12	24	158
Mississippi	36	26	14	— 61.1	11	2	1	2	5	21
Missouri	10	16	14	+ 40.0	1	...	13	...	...	14
Montana	33	68	63	+ 90.9	25	1	37	...	2	65
Nebraska	14	37	26	+ 46.2	12	1	13	...	...	26
New Mexico	159	95	101	— 36.5	65	4	32	...	6	107
New York	62	35	34	— 45.2	24	4	6	2	5	41
Ohio	105	256	226	+ 111.2	149	42	35	14	37	277
Oklahoma	333	348	314	— 5.7	215	50	49	29	33	376
Oregon	1	....	2	+ 100.0	1	...	1	...	...	2
Pennsylvania	162	321	325	+ 100.6	232	37	56	22	55	402
Tennessee	4	11	11	+ 175.0	6	1	4	...	1	12
Texas	1,313	1,003	1,068	— 18.7	819	84	165	73	401	1,542
East Texas Field	16	26	28	+ 75.0	22	3	3	15	8	51
East Texas Border Co.'s	8	11	11	+ 37.5	7	1	3	1	3	15
Rest of East Texas	44	40	56	+ 27.3	33	8	15	6	9	71
North Texas	235	193	192	— 18.3	128	13	51	12	89	293
South Texas	305	227	245	— 19.7	187	25	33	25	143	413
Corpus Christi Area	161	121	130	— 19.3	103	16	11	12	84	226
San Antonio Area	62	44	46	— 25.8	31	5	10	4	18	68
Laredo Area	82	62	69	— 15.9	53	4	12	9	41	119
Texas Gulf Coast	138	96	65	— 52.9	58	4	3	5	40	110
Texas Panhandle	129	68	85	— 34.1	67	10	8	...	10	95
West Texas	325	245	288	— 11.4	246	15	27	9	76	373
West Central Texas	113	97	98	— 13.3	71	5	22	...	23	121
Utah	3	3	4	+ 33.3	2	...	2	...	...	4
West Virginia	91	196	234	+ 157.1	172	21	41	16	39	289
Wyoming	63	68	58	— 7.9	24	2	32	...	4	62
Total United States	3,987	3,894	3,814	— 4.3	2,646	396	772	221	860	4,895

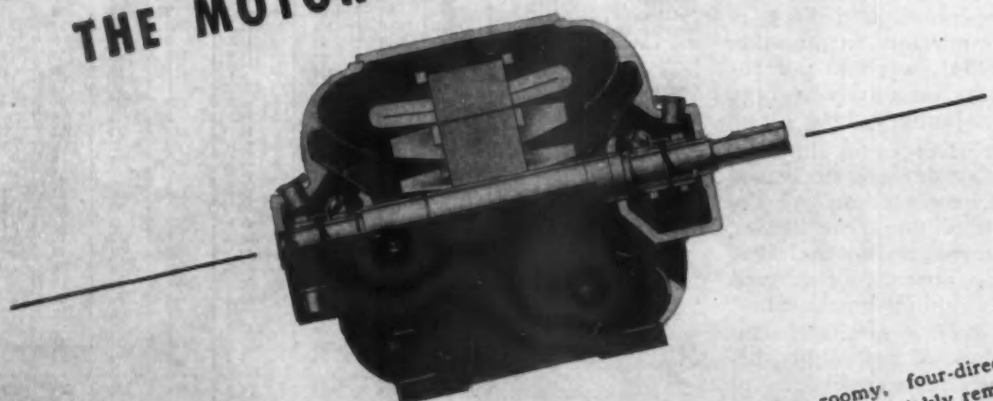
Drilling Rigs in Operation Now as C ompared with Year Ago, by Districts

This map-chart is based on detailed figures shown in an accompanying table.



YOU ASKED FOR PROTECTION

THESE FEATURES MAKE TRI/CLAD THE MOTOR YOU ASKED FOR



1 One-piece, cast-iron frame and rigid cast-iron end shields protect the motor against external blows and accidental abuse.

2 Enclosed construction protects against entry of falling objects and dripping liquids; keeps chips and the like from vital motor parts.

3 Low-velocity, double-end ventilating system provided by fans cast integrally with rotor winding keeps the motor running cool and prolongs insulation life.

4 New winding methods give shorter end turns, reduce the number of internal connections, and improve characteristics.

5 Features that add to convenience in installing include a stator which can be assembled with the conduit box on either side, and four-position end shields.

6 Synthetic-resin insulating varnish, with exceptional bonding strength and high resistance to heat, bonds the conductors together and prevents movement of the windings.

7 Steel-shell bearing linings with hard-tin-babbitt are of new design and have a method of grooving which provides positive lubrication for either direction of rotation.

8 New and simple ball-bearing mounting assures correct alignment and exclusion of foreign materials. Easily cleaned and regreased by means of the G-E pressure-relief system.

9 Big, roomy, four-direction conduit box is quickly removed from its base to give unrestricted working space for making connections. Leads are flexible and clearly marked.

10 Formex wire—the toughest magnet wire ever developed—assures a continuous dielectric film under the most severe conditions. Formex is highly resistant to abrasion, moisture, varnish solvents, and heat aging.

11 End windings are coated with Glyptal No. 1201 red, providing a tough, hard finish that is highly resistant to heat, moisture, oil, and abrasion.

12 One-piece cast-aluminum rotor winding with fans cast integrally is practically indestructible, has no joints, and gives a cool-running low-inertia rotor.

13 All laminations, both in stator and rotor, are annealed for low iron losses and uniform characteristics. Special rotor treatment improves operating characteristics.

BUILT FOR PROTECTION FIRST ....TO LAST

ND MODERN STYLING

Here's Your Answer

GENERAL ELECTRIC

TRI-CLAD

POLYPHASE INDUCTION MOTOR

1 Extra Protection

AGAINST PHYSICAL DAMAGE— SPECIAL SHIELD AND FRAME DESIGN

2 Extra Protection

AGAINST ELECTRICAL BREAKDOWN— STATOR WINDING OF FORMEX* WIRE

3 Extra Protection

AGAINST OPERATING WEAR-AND-TEAR— IMPROVED BEARING DESIGN

THE Tri-Clad motor is a completely new design, and it's built to industry's own specifications. After five years of field investigation to find out what you wanted in a motor, G-E designers started afresh. They took full advantage of new synthetic insulating materials, new close-tolerance manufacturing methods, and new, better ways to utilize active materials. They built a greatly improved general-purpose motor with *protection* as the top-ranking "plus" factor. We call this motor "Tri-Clad" because it gives you extra protection in three basic respects.

No other standard motor, we believe, has ever met the general-purpose requirements of industry with so well-balanced a combination of performance characteristics, convenience features, and provisions for protection. As a safeguard against production interruptions, as a prime factor in lowering costs, as an extra increment of value on any machine, you'll find that the Tri-Clad motor means extra profit protection, too.

Sizes now available are 1, 1½, 2 and 3 hp—larger sizes later. General Electric, Schenectady, N. Y.

*Reg. U.S. Pat. Off.

GENERAL ELECTRIC

750-25

Practical Hints for the Drilling Rig

The following reports on rig practices contain suggestions of a practical nature, designed to improve operating efficiency and safety. These items come from all parts of the United States and give an excellent picture of the ingenuity being brought into play in drilling operations.

Contributions to this page will be paid for at the rate of $5 for each illustrated item accepted. Address contributions "The Editor, THE OIL WEEKLY, Houston, Texas."

---

1. RIGGING UP

Steam-Line Distortion and Creep Minimized by Snubbing Block in Line

Snubbing block curbs steam-line distortion from boilers to engines and pumps.

TO PREVENT creep and distortion of a steam line from the boilers to the engines and mud pumps on drilling rigs, a double snubbing block may be set, forming part of the line when in operation. A nipple approximately 36 inches long, of the same size as the header, has two heavy lugs attached to it with bands of steel welded to both the nipple and the lugs. The lugs, about four feet long, are imbedded in a concrete block at the desired point, with the steam line welded in place when rigging up. Not only is the line supported above the ground at the desired height, but expansion and contraction are held in check so the line will not creep.

This drilling-in line reel may be spooled by catline or chain from drawworks.

2. GADGET

Reel Has Chain and Rope Drives

A DRILLING contractor operating in the Stoltenburg pool, Western Kansas, reduces time by providing his portable drilling-in line reel for spooling the line with either a catline or a take-off from the rotary draw works.

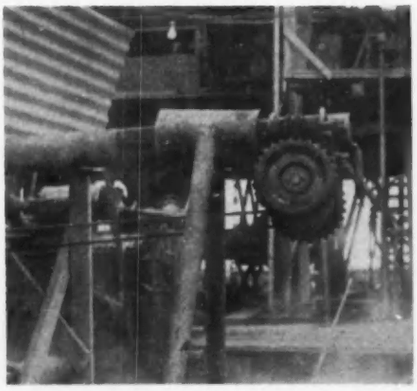
A 21-inch automobile rim was welded to one end of the body of the reel, while a small rotary-chain sprocket was placed on the outer end of the axle shaft. The entire unit was mounted on two short A-frames and skids made of 3-inch pipe, providing a saving in time by hoisting the reel up to the derrick floor, and spooling the line with a spinning line from the cat-head, or by means of a take-off from the rotary table, whichever happened to be the more convenient at the time.

The rim proved to be valuable also while spooling the bull-wheel from the reel. A snubbing rope thrown over the rim acts as a brake, keeping the line taut and spooling properly.

3. MUD HANDLING

Winches Control Level Of Suction Hose

BY mounting a pair of worm-gear winches on the end of the joint of drill stem carrying adjustable ends of mud suction hoses, one



Adjustment of the foot valves of the mud suction hoses is accomplished by a handy pair of worm-gear winches.

company provides a means for accurate adjustment of the foot valves, with the worm gear serving as automatic and fool-proof locking device of the setting without auxiliary equipment.

By using a crank handle with squared socket to fit over the ends of the worm shafts, the handle may be removed and stored within the end of the drill stem support when not in use, removing a possible source of injury and preventing unauthorized tampering with suction hose depth settings.

4. RIGGING UP

Valve Extensions on Feed-Water Line

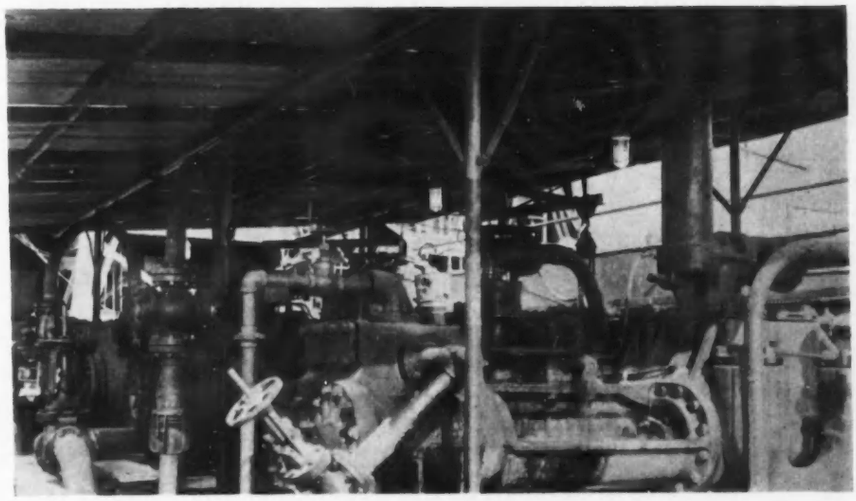
BY attaching two-foot extensions with T-head crosses to valves controlling feed-water flow to a battery of boilers, controls may be brought to a convenient height for manipulation without stooping. By attaching these extensions to paired cross-pieces, the handles are supported in the proper vertical position. The cross-pieces serve to block off attempted use of the space over the controls as a possible short-cut, a practice, incidentally, which has occasionally resulted in adjustments on boilers being changed and poor steaming resulting.

The extensions and their supports are readily removable for rig shift, to prevent possible strain on valve wheels while being loaded or transported.

T-head crosses and two-foot extensions permit control of feed-water flow to battery of boilers, and lessens chance of accidental manipulation of the valves.

5. EQUIPMENT CARE

Easily Erected Portable Tin Roof Provides Protection for Mud Pumps



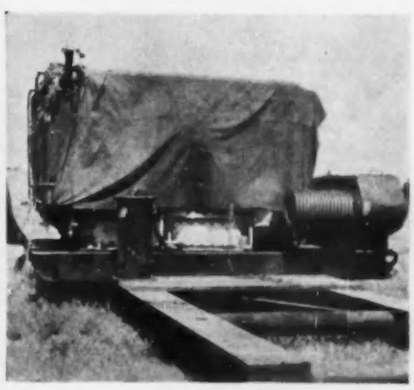
This roof for the mud pumps can be erected or torn down by handling 24 bolts.

A SINGLE slope roof may be provided for the mud pumps that can be quickly erected and torn down by handling only 24 bolts. At appropriate points on the mud pump bases, long collars are welded to receive studding, which slips snugly into the collars. Three studs are provided for each side of the roof, with one set longer than the others to give the desired pitch. Attached to the roof rafters are pipe plates with lugs welded to the under side that coincide to the location of the collars on the pump skids. These lugs, pointed downward, enter the top opening of the 2-inch studs. Diagonal cross-arm braces attached at their lower ends to bolting flanges prevent swaying of the roof after connecting to the roof plates at the proper points.

6. ENGINE CARE

Cover Protects when Not in Use

HELMERICH & PAYNE, Inc., provides protection for drilling engines when not in use by covering both engines with a water-proof canvas cover. The cover is roped to the engine foundation at both ends and in the middle.



A water-proof canvas cover protects these drilling engines when not in use.

Announcing the.

Attaching new tool joints by simply heating and screwing on by hand

REED SUPER SHRINK-GRIP TOOL JOINTS are attached **by hand** to drill pipe.

No bucking-on machine or similar power required. Attached to or replaced on drill pipe anywhere

. . . at the rig, in the yard, any working space

. . . even in limited working space.

NO MORE HAULING COSTS FOR TRANSPORTING DRILL PIPE TO GET TOOL JOINTS REPLACED

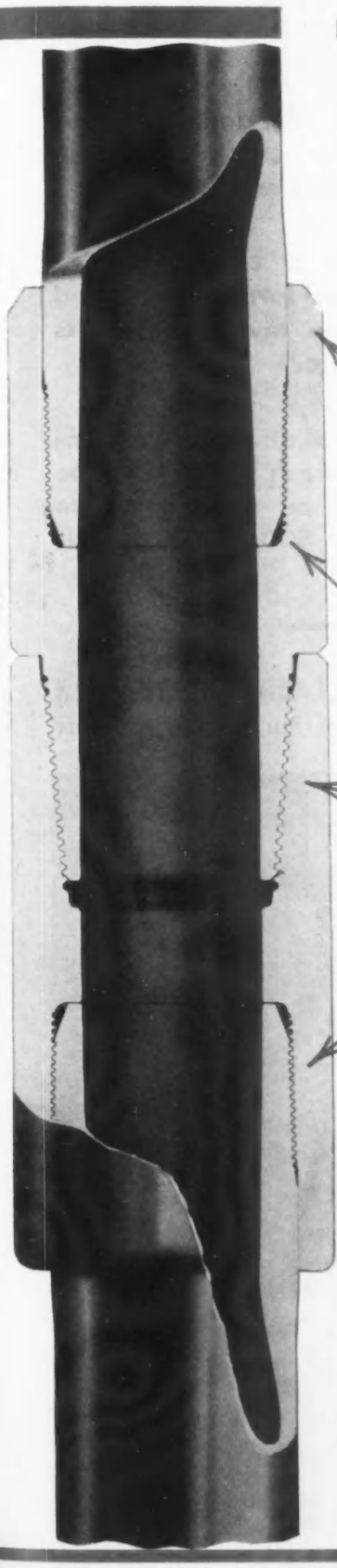
P. O. BOX 2119, HOUSTON, TEXAS

REED

REED SUPER SHRINK-GRIP

TOOL JOINT

The Heated Tool Joint is screwed on by hand and shrinks onto the drill pipe as it cools.



The REED SHRINK-GRIP "Safety Area".

The long tool joint recess is shrunk onto a smooth land on the drill pipe—supports the drill pipe against bending and failing at the last engaged thread—seals against drill pipe thread leakage.

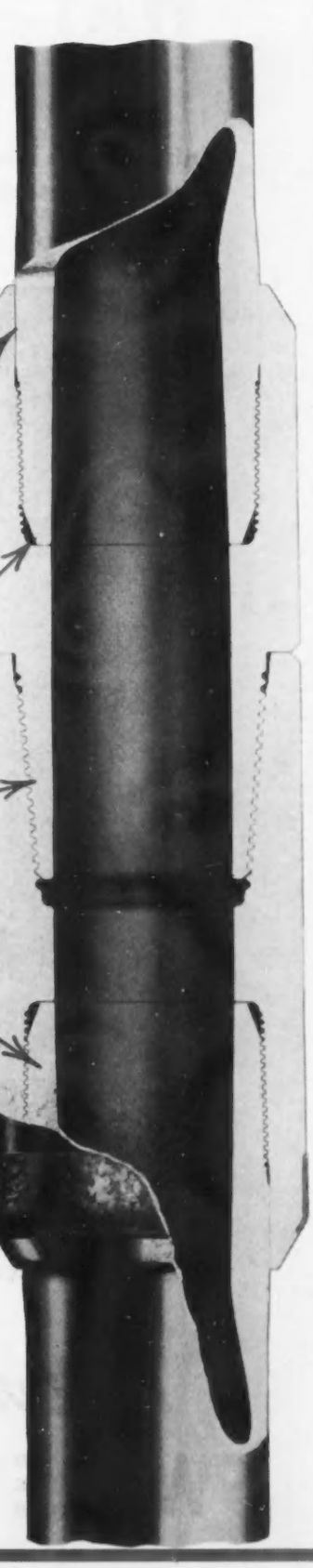
The drill pipe lands on an inside tool joint shoulder to effect an added seal which is another protection against leakage and failure, and prevents further make-up.

ACCURATE ALIGNMENT between all tool joint and pipe threads prevents undue wear or galling in the box and pin threads that often is caused from screwing together threaded sections that are not in good alignment.

Shrunk-on threads landed on wide flat crests and roots, plus accurate hobbing assure dependable connection between the pipe and tool joint.

TAPERED OR SQUARE SHOULDERS ARE OPTIONAL.

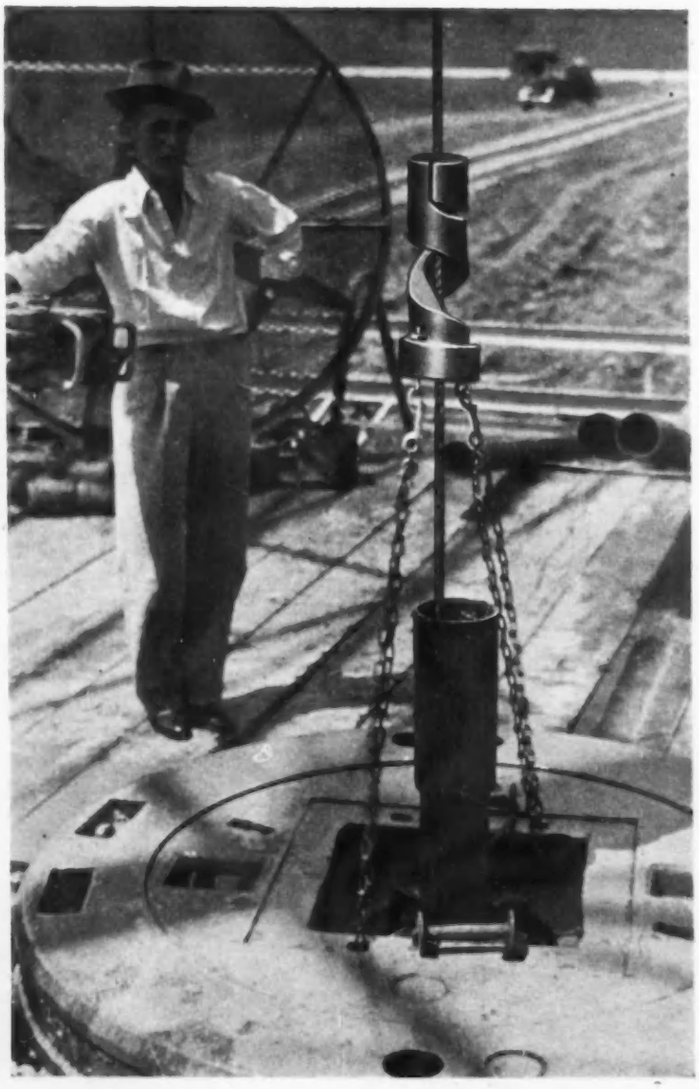
Hard metal protection added at small extra cost.



ROLLER BIT COMPANY

DRILLING OPERATOR DISCOVERS WAY TO *SAVE* $20.00 PER TRIP

A GULF COAST operator running a wire line core barrel on each tour found that by installing a Patterson-Ballagh Wire Line Wiper



1. They saved 150 gallons of water formerly needed to wash down the line each trip.

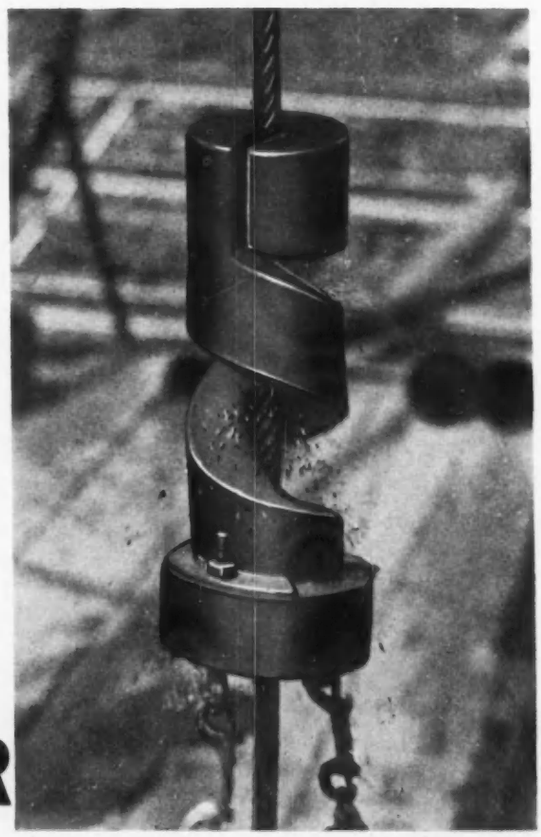
2. They saved 5 to 7 sacks of chemical mud formerly required to bring the mud back to its original state.

After the installation it was unnecessary to wash down the line and a saving on mud equal to approximately $20.00 a trip was effected.

See Composite Catalog

PATTERSON-BALLAGH CORPORATION

LOS ANGELES · HOUSTON · NEW YORK CITY



Patterson-Ballagh

WIRE LINE WIPER

HIGHLIGHTS IN THE WEEK'S NEWS

Washington

State Department Denies Pressure in Controversy

State Department officials last week denied that any pressure was being exerted upon American oil companies to settle the expropriation controversy with Mexico.

This was made known following publication of reports that the department had told American and British oil interests that unless they negotiated a settlement of their claims, the Washington government would do it for them. Basis for this demand, it was said, was the determination of the administration to eliminate the friction created by the uncertain situation with respect to oil, and a hope that in this way it could prevent the possible sale of Mexican surplus oil to Japan.

More than 10,000,000 barrels of Mexican oil are said to have been disposed of to Germany and Italy under barter deals before the British blockade cut off supplies. More recently, it has been reported that Japanese interests were dickering for oil, offering to build a pipe line from the oil fields to a Pacific port.

The question of oil is understood to have been discussed by Vice President Henry A. Wallace when he visited Mexico to attend the inauguration of President Avila Camacho, and is said to have found the Mexican executive willing to make a settlement with the companies although determined not to restore their properties to them.

Export Licensing Extended to Well and Refinery Machinery

Moving to keep all possible war material out of unfriendly hands, President Roosevelt on February 4 approved a recommendation by Colonel Russell L. Maxwell, Administrator of Export Control, and issued a proclamation placing oil well and refining machinery under the export licensing system. The control was effective February 10.

The President's proclamation carried another step further the plan of controlling petroleum exports initiated July 26, last with an order placing aviation gasoline and aviation lubricating oil and tetraethyl lead under the licensing system.

This order was followed on September 16 by a proclamation restricting the export of equipment for the production of aviation motor fuel or tetraethyl lead and plans or specifications for such equipment, and on December 20 by another order extending the control to equipment and plans for equipment for the production of aviation lubricating oil.

May Affect Russian Purchases

The addition of well and refining equipment to the restricted list was seen in Washington as possibly seriously retarding Russia's oil expansion program.

Large shipments of drilling rigs and other equipment are said to have been made to Russia in recent months, and reports are current that additional purchases running as high as $10,000,000 were contemplated. No suggestion was made by administration officials, however, as to how the President's proclamation would affect the Russian situation, although it is known that the British have been protesting the shipment of American goods to the Soviet on the ground that much of it leaks through to Germany or is used to increase production of needed commodities for that country.

Officials were equally vague as to the effect of the restrictions on shipments to Latin America, although it was indicated no difficulties were expected to arise. Since special orders have been issued permitting the free shipment of aviation motor fuel to Western Hemisphere countries and the British Empire, it is expected preference will be given applications for export of drilling and refining equipment to those areas.

The President's proclamation, however, will require export licenses for shipment of machinery to South America as well as to other areas. In handling other commodities on the restricted list, no objection has been raised to exports to Western Hemisphere countries and it is assumed in Washington that this policy will be extended to the items just placed under control.

News Index

General:

Associations	44
Courts	43
Legislation	48
Washington	43
Markets-Statistics	53
Men in News	71
World-Wide Developments	46

U. S. Field Operations:

Arkansas	63
California	64
Completions	65
East Texas	59
Forest City Basin	57
Illinois	55
Indiana	55
Kansas	57
Kentucky	56
Louisiana Coast	62
Michigan	64
Mississippi	64
North Louisiana	63
North Texas	59
Oklahoma	56
Southeastern States	64
Southwest Texas	60
Texas Gulf Coast	61
West Texas	57
Wildcat Development	69

Courts

United States Supreme Court Supports Connally Act

Strongly supporting the Connally act, the United States supreme court on February 3 held that it was not necessary to show that the federal government has a financial or proprietary interest to sustain criminal proceedings against alleged violators.

The court's construction of the act was expressed in an opinion reversing a judgment of the East Texas district court sustaining a demurrer to ten counts of an indictment against J. W. Gilliland, Ralph Gilliland, Fred A. Williams, et al, charging them with having caused to be made and used verified reports falsely stating the amount of petroleum produced from certain oil wells or received from certain producers.

The district court held that these counts did not state an offense under the Connally act of 1933, in that the matter was not one in which the government had a financial or proprietary interest, but Chief Justice Hughes, delivering the opinion of the high court, held that the amended act of 1935 had so broadened the provisions of the original statute as to demonstrate conclusively the purpose of Congress in enacting the legislation.

"If the provision of Section 35 (of the criminal code), under which the indictment is laid, be construed according to its literal and natural import," he declared, "it is manifest that the statute covers the offenses charged in the substantive counts. The affidavits and reports, as described in the indictment, containing statements alleged to be false and fraudulent, were made and used in a matter within the jurisdiction of a department and agency of the United States."

The 1934 law, the chief justice explained, broadened the provision "so as to leave no adequate basis for the limited construction which had previously obtained."

"The statute was made to embrace false and fraudulent statements or representations where these were knowingly and willfully used in documents or affidavits 'in any matter within the jurisdiction of any department or agency of the United States.' In this, there was no restriction to cases involving pecuniary or property loss to the government. The amendment indicated the Congressional intent to protect the authorized functions of governmental departments and agencies from the perversion which might result from the deceptive practices described. We see no reason why this apparent intention should be frustrated by construction. . . .

"If the language of the amended section could be deemed ambiguous, the legislative history of the amendment would dispel any doubt as to the Congressional purpose."

The Secretary of the Interior, it was

explained, had sought legislation to aid the enforcement of laws relating to the functions of his department and, in particular, to the enforcement of regulations under the National Industrial Recovery Act with respect to the transportation of hot oil, due, it was explained by the secretary, to the lack of a law under which prosecutions might be had "for the presentation of false papers." A bill was passed by Congress, which was vetoed by the president because existing law covered the offense dealt with; another measure was then proposed by the secretary to obviate the objections raised.

"A bill was then passed and approved which included, with other amendments of Section 35, the provision now before us, omitting the limiting words which had been deemed to make the former provision applicable only to cases where pecuniary or property loss to the government had been caused," the opinion stated. "The report of the Judiciary Committee of the Senate stated that the amendment in question had been proposed by the Department of the Interior with the purpose of reaching 'a large number of cases involving the shipment of hot oil, where false papers are presented in connection therewith'."

Penalties Discretionary

"In the light of the text of the act of 1934, amending Section 35, and its legislative history, it is also clear that the fact that the penalty perscribed by Section 35 was greater than that fixed by the act of February 22, 1935, has no significance in connection with the construction and application of the former," the chief justice held. "The matter of penalties lay within the discretion of Congress. Section 35 covered a variety of offenses and the penalties prescribed were maximum penalties which gave a range for judicial sentences according to the circumstances and gravity of particular violations.

"Similarily lacking in merit is the contention that the act of February 22, 1935, operated to repeal Section 35 as amended in 1934, so far as the latter appplied to affidavits, documents, etc., presented in relation to hot oil. There was no express repeal and there was no repugnancy in the subject matter of the two statutes which would justify an implication of repeal. The act of 1934, with its provision as to false and fraudulent papers, has its place as a fitting complement to the act of 1935 as well as to other statutes under which, in connection with the authorized action of governmental departments or agencies, the presentation of affidavits, documents, etc., is required. There is no indication of an intent to make the act of 1935 a substitute for any part of the provision in Section 35."

New Mexico Tax Case Rehearing Denied

The New Mexico Supreme Court last week denied a motion of Humble Pipe Line Company for a rehearing of a case in which the court previously ruled the company was liable to state income tax on proceeds from transporting New Mexico oil. The court had ruled that the tax applied to profits from transporting "all oil gathered in New Mexico."

Associations

Oil Production Subjects on A.I.M.E. New York Program

The final program for the 154th meeting of the American Institute of Mining & Metallurgical Engineers, announced last week, reveals an interesting selection of papers of current interest for presentation at meetings of the petroleum division. The meeting will open February 17, while sessions of the Petroleum Division will be held on February 18, 19 and 20.

During the meeting, the Anthony F. Lucas Medal will be awarded to Conrad Schlumberger, posthumously, and Marcel Schlumberger, his brother, "for development of the art of electrical coring or electrical logging."

John R. Suman, vice president in charge of production for Humble Oil & Refining Company, Houston, will be introduced as the institute's president for 1941.

The opening Petroleum Division session, starting at 9 a.m., will be given over to production engineering, with the following papers scheduled:

"Geology of the Jennings Oil Field, Acadia Parish, Louisiana — a Piercement-Type Salt Dome," by M. T. Halbouty, Merit Oil Corporation;

"New Development in Cementing Practices," by C. P. Parsons, Halliburton Oil Well Cementing Company;

"Geochemical Well Logging," by Leo Horvitz, Subterrex;

"A New Geochemical Prospecting Method for Oil and Gas Fields—the Geodynamic Process," by Sylvain Pirson, Pennsylvania State College;

"Physical Theory of Darcy's Law," by M. King Hubbert;

"Factors Influencing Wet Gas Recovery by Recycling," by Judson Swearingen, University of Texas;

"Density of Natural Gases," by Marshall B. Standing and Donald L. Katz, University of Michigan;

"Control of Filtration Characteristics of Salt-Water Muds," by G. R. Gray, J. L. Foster and T. S. Chapman, Humble Oil & Refining Company, and

"Mechanism of Fluid Displacement in Sands," by S. E. Buckley and M. C. Leverett, Humble Oil & Refining Company.

Symposium on Wednesday

Wednesday's program will be devoted to a symposium on foreign and domestic oil production, with William W. Haynes acting as chairman, and B. B. Zavoico as co-chairman of the morning session, and Zavoico as chairman and M. T. Halbouty as co-chairman of the afternoon session.

Foreign countries to be discussed will include Argentina, Canada, Colombia, Cuba, Ecuador, Mexico, Peru, Russia, and Venezuela, to be concluded with a general summary of the situation in Europe and Asia.

Reports on domestic production will include: South Arkansas, by Warren B. Weeks, Phillips Petroleum Company; California, by V. H. Wilhelm, The Texas Company; Illinois, by Alfred H. Bell and George V. Cohee, Illinois Geological Survey; Indiana, by G. F. Fix, Indiana Conservation Department; Kansas, by W. A. VerWiebe, University of Wichita; Kentucky, by C. D. Hunter, Kentucky-West Virginia Gas Company; North Louisiana, by H. K. Shearer, Hunter Company; South Louisiana, by J. Brian Eby; Michigan, by Theron Wasson, The Pure Oil Company; Mississippi, by H. M. Morse, Mississippi Oil & Gas Supervisor; Missouri, by Frank C. Green, Missouri Geological Survey; Nebraska, by Eugene C. Reed, University of Nebraska; New Mexico, by A. Andreas, New Mexico Oil Conservation Commission; New York, by C. A. Hartnagel, assistant state geologist; Ohio, by Kenneth Cottingham, Oil Fuel Gas Company; Oklahoma, by Thomas Brownfield, The Carter Oil Company; North and Central Pennsylvania, by Arthur C. Simmons; South Pennsylvania, by John T. Galey; Tennessee, by Kendall E. Born, Tennessee Division Geologist; East and East Central Texas, by D. V. Carter, Magnolia Petroleum Company; Texas Gulf Coast, by Paul B. Leavenworth, Gulf Oil Corporation; North Texas, by Lewis W. MacNaughton, DeGolyer-MacNaughton-McGhee; North Central Texas, by H. W. Imholz; Texas Panhandle, by Henry Rogatz; South Central Texas, by William H. Spice, Jr.; South Texas, by Michael T. Halbouty; West Texas, by Peter P. Gregory, Yates Field Engineering Committee; West Virginia, by David B. Reger, and Rocky Mountain District, by C. E. Shoenfelt, Petroleum Information, Inc.

Economics Session

L. F. Terry is chairman, and S. A. Swensrud co-chairman of the Thursday sessions, to be devoted to economic discussions. Papers scheduled are:

"The Validity of Competition in a Natural Resource Industry," by John D. Gill, The Atlantic Refining Company;

"The Outlook for Petroleum Prospecting," by E. DeGolyer;

"World Consumption of Petroleum," by V. R. Garfias, R. V. Whetsel and J. W. Ristori, Cities Service Company;

"World Production of Petroleum Substitutes," by V. R. Garfias and R. V. Whetsel;

"Some Factors in the Economics of Recycling," by Emby Kaye, Distillate Engineering & Processes Company;

"Mineral Rights Assessments with Special Reference to Kern County Procedure," by Paul J. Howard, Kern County (California) Assessor's Office.

"Trends in Demand for Petroleum Products," by W. B. Case, Shell Union Oil Corporation.

Eugene Holman, director of Standard Oil Company of New Jersey, will be the speaker at the Petroleum Division dinner, to be held at the Biltmore Hotel. His topic will be "Petroleum Transport Problems."

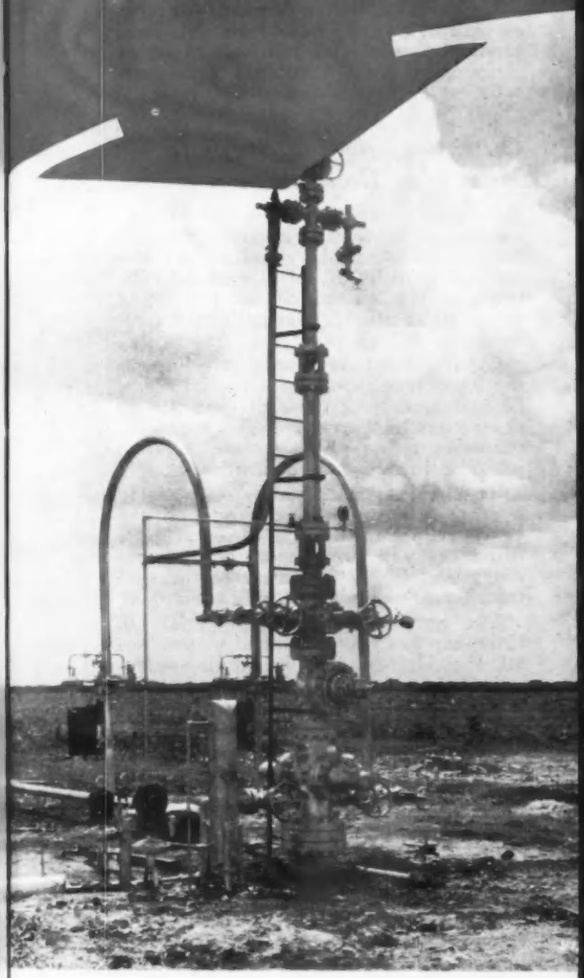
Secondary Recovery to Be Eastern A. P. I. Topic

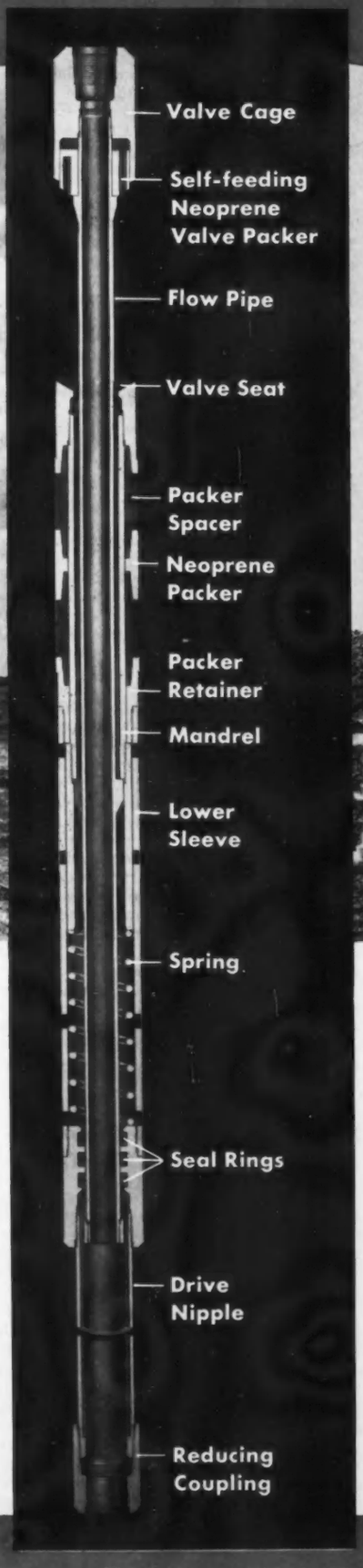
An attendance of 500 oil and gas producers, geologists and engineers is expected at the annual meeting of the Eastern Division of the American Petroleum Institute's Division of Production, to be held April 17-18 in Pittsburgh.

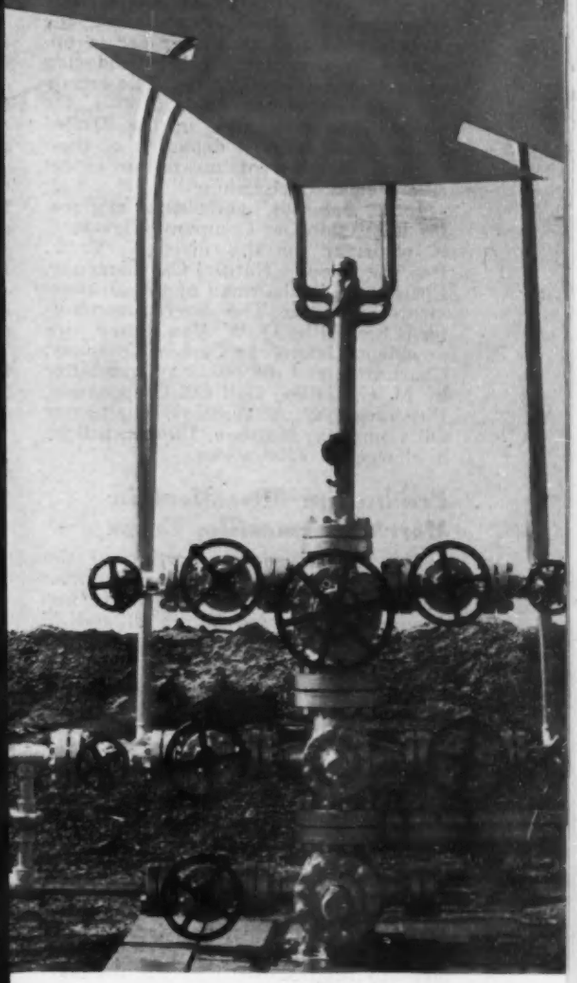
The program includes a group of papers on methods and problems of secondary recovery of oil from depleted sands in the Appalachian region. One half-day session will be given over to the consideration of this subject. Engineers and geologists are generally agreed

TWO-ZONE PRODUCTION DEMANDS THE INDUSTRY'S SAFEST, MOST POSITIVE SEALING PACKER . . . . . .

CAMERON CIRCULATING ANCHOR PACKER







The need for a pressure-tight pack-off between zones in wells producing from two or more zones simultaneously is immediately obvious. Operators concerned with multi-zone completions agree that the success or failure of the completion job depends largely on the packer itself.

A recent survey of two-zone completions revealed that Cameron Type ""G" Circulating Anchor Packers are performing satisfactorily in a big majority of all wells completed in that manner to date.

The accompanying cross-section drawing clearly illustrates the simplified design and operation of Cameron Type "G" Circulating Anchor Packers. Their conspicuous success has been due largely to the unique valve packer which is designed with a SELF-FEEDING neoprene sealing element, assuring a pressure-tight seal even though the seat may have been cut during washing operations. There are no slips, J-tools or other complicated mechanisms. The packer is of the anchor type and is set by simply letting off part of the weight of the tubing string. When screen is made up in the anchor pipe below the packer, the entire assembly may be pulled from the well at any time it may be desired to kill the well for plugging back, reperforating, etc.

Any desired special data pertaining to the Cameron Type "G" Circulating Anchor Packer will gladly be furnished on request.

CAMERON IRON WORKS, INC.

711 MILBY STREET HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y.
Oklahoma Representative: Paul Edkin, Tulsa
California Distributor: The Howard Supply Co., Los Angeles

that current methods of production have, on the average, succeeded in recovering substantially less than one-half of the total amount of petroleum which had originally accumulated in reservoirs that have been tapped by drilling. Effective methods for the recovery of additional percentages of these accumulations of crude oil are probably more immediately important to the producers of the Appalachian area than they are to operators in any of the other producing areas of the United States. The reason for this is that the fields of this, the oldest producing area in the United States have suffered depletion of their original supplies of oil to an extent rarely equaled elsewhere.

J. J. Schmidt, petroleum engineer for East Ohio Gas Company, Cleveland, is chairman of the division. V. F. Bowyer, Peoples Natural Gas Company, Pittsburgh, is chairman of the arrangements committee. The program committee is headed by O. W. Van Petten, vice president, Columbian Carbon Company, Charleston, and the publicity committee by M. G. Gulley, Gulf Oil Corporation, Pittsburgh. W. A. Watkins, The Carter Oil Company, Mattoon, Illinois, will be in charge of registration.

Production Men Meet in March at Amarillo, Texas

The regular spring meeting of the Mid-Continent District of the American Petroleum Institute's Division of Production will be held March 21 and 22 in the Herring Hotel at Amarillo, Texas.

The following committee chairmen have been appointed to arrange the details of the meeting:

Program, C. H. Keplinger, Shell Oil Company, Wichita; general arrangements, George Berlin, Skelly Oil Company, Pampa, Texas; registration, Herbert Goodpaster, Kerlyn Oil Company, Oklahoma City; entertainment, R. C. Kay, Amarillo, and publicity, N. D. Bartlett, Amarillo Globe News, Amarillo.

Members of the district have been requested to file with the various chairmen any suggestions they care to make for the conduct of the meeting.

North Texas Group Changes Meeting Date

The North Texas Oil & Gas Association has changed the date of its annual meeting, to be held in Wichita Falls, from February 22 to March 1.

Standard Plans Two Biggest Tankers on Pacific Coast

Standard Oil Company of California has completed plans for the construction of two 152,000-barrel capacity tankships, the vessels to be the largest and fastest of their kind owned on the Pacific Coast.

Specifications call for appoximately 18,200 tons deadweight capacity; nine main cargo tanks; propulsion equipment to consist of steam turbines developing 8200 shaft horsepower; overall length 547 feet; breadth 70 feet; depth 40 feet; speed 15½ knots per hour.

The new vessels will augment the company's present fleet of 18 tankers plying under the house flag of the company. They will be used in coastwide and offshore trade, with the home port at San Francisco.

World-Wide Developments

Six More Tests Planned For New Canadian Field

Six additional tests loomed last week for the Steveville structure, Alberta, Canada, where Standard Oil Company of British Columbia's Princess 2, the discovery, was completed for 500 barrels of 26.3-gravity oil a day, following acid treatment.

Anglo-Canadian Oils announced location for S½ Section 18-20-11w4, while Dawson Syndicate announced plans for drilling in the north half of the same section. A joint test will be drilled by National Petroleum Company and Vulcan Oils, and others will be put down by Anaconda Oil Company, Patricia Oils, and Royal Canadian Oil Company.

Standard Oil Company of British Columbia had previously announced location for Princess 2 in Legal Subdivision 5, Section 13-20-12w4.

Russia to Develop Gas for Fuel and Carbon Black

Russia's government officials contemplate development of that country's negligibly exploited natural gas reserves, which are believed to be almost as great as those in the United States, having been estimated at 700,000,000,000 to 900,000,000,000 cubic meters.

Reserves ready for commercial exploitation, located mainly in the oil fields at Baku, Grozny and Maikop, represent a reserve of only 50,000,000,000 cubic meters; and recovery in 1939 was about 3,000,000,000 cubic meters, which was used as fuel in the oil fields, for generating electricity, and for commercial and domestic purposes in towns and villages.

Present plans of the government call for expanding development of established reserves and for carrying out exploratory work in areas that would be exploited after 1942. Supplies are desired particularly for industrial districts of central European Russia that are deficient in local fuel resources.

Gasoline and carbon black plants utilizing natural gas will be built near the gas wells, and generally will be small and portable to permit moving when necessary. A network of gas pipe lines must be built.

Sabotage Compels Germany-Italy to Re-Refine Gasoline

Germany and Italy have had to re-refine considerable of the gasoline obtained from Rumania since the war began, it was brought out in hearings on sabotage on gasoline shipments on the Yugoslav State Railways last week.

It seems that information developed from three workers of Czech origin held for questioning in connection with the sabotage brought out that a sabotage ring with which they were alleged to have been associated provided an ingeneous compound with a rubber base that was dropped into the tank cars. When the gasoline was burned in internal combustion engines the compound in the fuel clogged the valves and ruined the engines. After discovery of the cause of the ruined engines it was necessary to examine all and refine much of the gasoline shipped to Italy and Germany.

Incidentally, Italian demands for larger quantities of Rumanian oil have jammed Yugoslavian railroads as far as Trieste, bringing about a serious curtailment of food shipments.

Outline Canadian Steps to Meet War Conditions

Various measures taken by the Canadian government because of the war have been discussed by American Commercial Attache H. M. Bankhead, Ottawa, in the United States Bureau of Mines publication, "International Petroleum Trade."

Canada will have to continue importing 100-octane gasoline for special needs, he stated, despite the fact that the oil controller has arranged for Canadian refineries to supply 87-octane aviation gasoline in adequate quantities.

To enable Turner Valley oil wells to operate at best efficiency throughout the year, refineries in the three Prairie provinces will provide storage accommodations for 27½ percent of the estimated year's requirements of each plant.

The Sarnia refinery of Imperial Oil Company has been equipped to produce all the high-grade lubricating oil required for Canadian consumption, whereas supplies in the past were imported from the United States.

Establishment of additional service stations has been prohibited, and only fuel oil burners using less than 4800 United States gallons annually may be installed.

Imperial Oil, Limited will refine increased quantities of crude, and more South American crude will be used, importation of 10,000 barrels daily for the company's Sarnia, Ontario, refinery being contemplated. That oil will be reshipped from an Atlantic port by pipe line to the terminus of the company's line at Cygnet, Ohio, and from there through the company's lines to Sarnia.

Iran Company Reported in Difficulty Due to Curtailment

Anglo-Iranian Oil Company, Ltd., has been saddled with a material financial burden as well as handicapped by loss of markets through sharp curtailment of operations in southern Iran, according to a translation from *Oel und Kohle*, Vol. 36, No. 38, Berlin, October 8, 1940, Mineralölberichte, p. 302.

The company was said to have been compelled to limit production to about half of the pre-war output of 78,000,000 barrels annually, because of shaping of the military situation in Europe and the difficulties of sale that make it impossible for the company to export through the Suez Canal, refined products made in its refinery at Abadan, at the mouth of the Shatt-el-Arab. The financial burden mentioned is based on the fact the company had to pledge itself to maintain in full its payments to the Iranian government without regard to actual production.

2 Experienced Production Men Talk Over a Real Saving

We installed this 54" twin-crank unit on an old Gulf Coast pumping lease, waited three months, then went around to check its performance. Three months is a pretty short service record, but long enough for us to learn from the production superintendent and pumper that the Parkersburg unit was their choice in the pumping unit field. "Easier to balance" . . . "Smoother operation" . . . "Less strain on rod string" . . . "Lifting a full allowable every day" . . . "Not a minute's down-time" . . . "The best pumping unit we ever operated" . . . were some of the comments they offered.

The 90 days of better performance of this particular unit did not alone form the opinion of these two experienced production men. They are well aware of the endless number of fine service records Parkersburg Engineered Pumpers have made in so many fields over a long period. They are thoroughly familiar with the details of design, engineering and construction which, combined, assure the faultless performance of this and other Parkersburg Pumping Units throughout the fields of the world.

Full details of every Parkersburg Pumping Unit type are in your Composite Catalog, along with the phone number of your Parkersburg representative, who will welcome a call from you.

THE PARKERSBURG RIG & REEL COMPANY

PARKERSBURG, W. VA.

DALLAS - HOUSTON - TULSA - LOS ANGELES - NEW YORK

D 1-41

PARKERSBURG

DEPENDABLE ENGINEERED PUMPERS

Legislation

Roosevelt Asks Study of Pipe Lines in Defense

Oil matters loomed large on the Washington scene last week, with President Roosevelt asking for a Congressional study of the defense aspects of the pipe-line situation and the Department of Justice preparing to launch a long-anticipated suit to assert the title of the United States to the coastal tidelands of the country.

Outstanding development on the state legislative front was Texas House committee approval of a bill to make conservation laws permanent, and House

Representative Lester Clark, Chairman, Texas House Committee on Oil, Gas and Mining

approval of a bill for renewal of the state's membership in the Interstate Oil Compact Commission. The Oklahoma Senate passed and sent to the House for concurrence a bill authorizing extension of the compact.

In a letter to Chairman Clarence F. Lea of the House Interstate and Foreign Commerce Committee, President Roosevelt urged that the oil subcommittee study the pipe-line situation, particularly that in the southeastern states where construction of a line has been delayed by railroad opposition.

"The Atlantic Coast area now is dependent upon ocean transportation for nearly its entire supply of crude petroleum and petroleum products," the President pointed out.

"Present facilities for such transportation do not afford much leeway under normal conditions, and very likely will prove inadequate in an emergency. It is in the interest of national defense to augment currently these facilities, especially if this can be done by private agencies without extra cost to the government.

"I have been informed by the government agencies concerned that the completion of one gasoline pipe line and the commencement of another to the southeastern states have been delayed by opposition from other carriers in interstate commerce. Although this situation ultimately might correct itself, delay in its solution will retard the completion of essential transportation facilities. If the matter is not settled before your committee resumes its investigation under House Resolution 290, as extended, I hope that it will be included in your hearings and that a solution thereto will be presented to the Congress."

To Study Legislative Angle

Making public the President's letter on February 6, Lea disclosed that he has requested information about the situation from both sides in the controversy, and that the oil subcommittee "will give proper consideration to the problem" before it submits its report.

"The committee will go into the facts with a view of determining whether or not there is or should be a legislative remedy provided to meet the situation suggested by the President," he said. "Should the inquiry of the committee convince us that the facts justify or require legislation, I assume an appropriate measure will be recommended to the House for passage."

Representative William P. Cole, Jr., chairman of the subcommittee, planning to go to Florida to recuperate from a recent illness, is expected to spend some time in Georgia, where the railroads are said to have blocked the construction of pipe lines by the invocation of certain right-of-way laws which are understood to be making it impossible to get a lane for the pipe lines.

There was, however, no indication this week that the President's letter will lead to the holding of hearings on any oil question, although members of the House committee voiced the expectation that they would be called next month. In other quarters, however, it was said that members of the National Defense Advisory Commission, who last year asked for new hearings at which they could present their views on oil as it appears in the defense picture, now do not see any necessity for legislation.

Congressional sentiment for cooperation with the administration in its effort to secure some sort of federal control over the industry may be set back by the disclosure this week that the Solicitor General had been instructed to proceed with a suit to assert the title of the United States to the coastal tidelands, not only of California and the Gulf states, where there are underwater oil fields, but of all of the waterfront states.

The subject of lengthy Congressional studies during the past few years, the ownership of the tidal lands has been the subject of bitter controversy, with California, Texas, Mississippi, Louisiana and Florida officials vigorously fighting all efforts of the federal government to acquire title.

It is expected that the projected suit will be filed in the federal court in the District of Columbia. However, it is possible that the issue will be carried direct to the United States Supreme Court, as can be done in certain cases involving differences between the federal and state governments, and there have been reports that a test suit would be filed in California, where there are several controversies between the federal and state authorities over the ownership of coastal properties.

It was learned that the whole question has been exhaustively studied by the lands division and the solicitor general's office, and the work of preparing the suit has been turned over to Arnold Raun, a member of the solicitor general's staff.

While Department of Justice officials have refused to discuss the situation and little can be learned about it in other quarters, it became known that officials of the Navy Department within the past few days told a House committee in executive session that there would have to be litigation in California involving title to certain shore properties, although it was not indicated whether the Navy was seeking to have anything in the nature of a test, rather than an all-out suit to settle the question once and for all time.

Representative H. L. Kennedy, vice chairman, Texas House Committee on Oil, Gas and Mining

Members of Congress on committees which tried unsuccessfully to determine the legal aspects of the government's demand for title to the underwater lands, expressed themselves as pleased over the prospects of litigation to test the question, pointing out that the burden of proof then would be upon the government, rather than upon the states.

There were indications that the whole question of oil legislation is quietly being shoved in the direction of the shelf. Not only is it not expected that there will be any further hearings by the oil subcommittee before it makes its final report in April, but there is a general belief that the oil control bill, sponsored by Secretary of the Interior Harold L. Ickes and the subject of lengthy hearings in the last Congress, will not be reintroduced unless definite demand for such action is made by the President.

Texas Committee Approves Bills

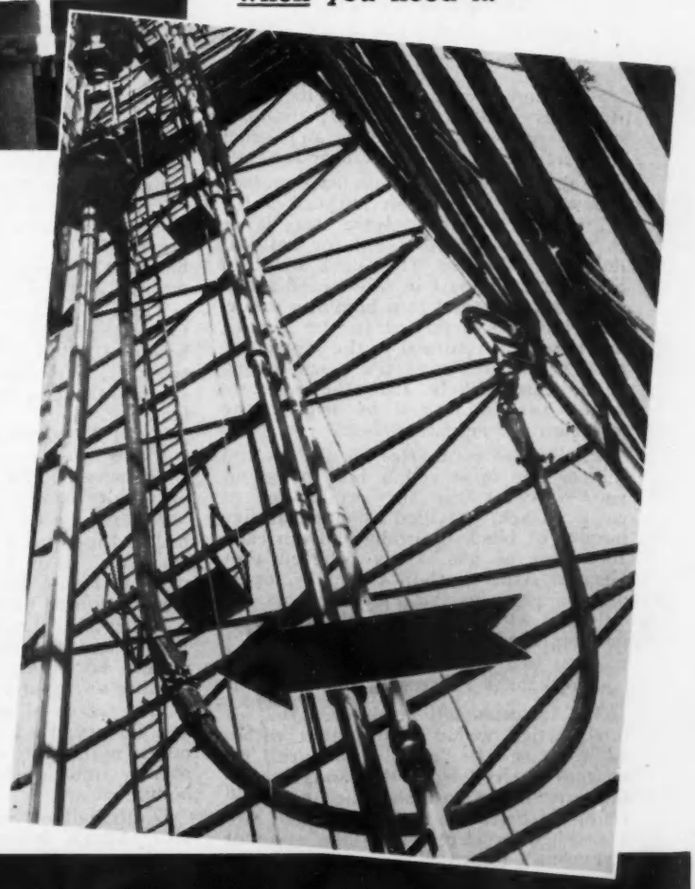
The Texas House committee on oil, gas and mining approved bills to make Texas conservation laws permanent, and the House unanimously approved and sent to the Senate for concurrence a bill

WE STRONGLY RECOMMEND

UNION WIRE LINES

JARECKI has been exclusive oil country distributor for UNION Wire Lines since 1927. As a result of this long experience we can recommend UNION Lines without reservation as exceptionally well adapted to oil country requirements and amazingly durable.

Large stocks of UNION Wire Lines are carried at all of Jarecki's 37 oil country stores. We can furnish you the UNION Line that is exactly adapted to your needs—when you need it.



HEWITT MULTIPLE-LENGTH ROTARY HOSE

The Hewitt Rubber Corporation has just introduced a new, money-saving idea in its "Multiple Length" Rotary Hose. This hose consists of two separate lengths joined by a leak-proof, built-in coupling. Thus one short length is all you need as "stand-by" hose—an important saving on your drilling costs.

In every respect the coupled hose handles and operates like the conventional continuous length. Waterway is full sized. There is no metal exposed to wear.

JARECKI distributes the full line of HEWITT Rubber Products—Stuffing Box Rubbers, Belting, Packing, Hose—to meet every oil country need.

General Offices: St. Louis, Mo. Home Office and Factory: Erie, Pa., U.S.A. Branch Stores at All Important Places in the Oil Country.

Jarecki
MANUFACTURING COMPANY
"Since 1852"

District Offices: Pittsburgh, Pa.; Tulsa and Bartlesville, Okla.; Dallas and Houston, Texas; Mt. Pleasant, Mich.; Centralia, Illinois.

to extend for two years the state's membership in the Interstate Oil Compact Commission.

At a hearing on the conservation bills, only one opponent appeared. C. R. Starnes, Gladewater, had no objection to the conservation laws or to making them permanent, with the exception of one phase of the market-demand bill. He pointed out that the bill provides that the Texas Railroad Commission shall determine what the market demand is for each field, and shall allocate production accordingly.

Starnes said the result of this provision was to require the commission to give to each field an allowable equivalent to the firm market demand which it could show. Thus, by reducing the price slightly, operators in one field might draw a great deal of trade and take the market from other fields producing the same grade and quality of oil.

He recommended that the legislature provide that the commission determine market demand for the entire state, and then allocate this equitably between the fields producing the same grades and qualities of oil. This plan would coincide with that now followed in Louisiana. Committee members recommended that Starnes offer a bill to make the change he desired, and then voted 16 to 1 to recommend the bill favorably.

Texas Tax Hearings

The House committee on revenue and taxation has scheduled its first public hearing on tax bills for February 12. The committee has decided to divide the bills into three groups: omnibus bills, single-shot tax bills, and other measures, such as the transaction tax.

Both Senate and House have passed House Bill 134, which authorizes the State Land Board to lease state lands to the federal government for national defense purposes. The land involved lies along the coast in submerged areas, and would be used as a bombing range. The bill was amended in the Senate, however, and returned to the House for concurrence in the Senate amendments. It appeared likely that the measure would pass soon, and be sent to the governor for signature.

The House committee on oil, gas and mining has approved a bill to permit use of sweet gas for production of carbon black, provided as much as five pounds of black is produced from each 1000 feet of gas. It is believed that General Atlas Carbon Company, operating a plant in the Panhandle, is the only one which could comply now with provisions of the bill.

Arkansas Processing Measure

An Arkansas bill being prepared for introduction would require that within 12 months all "tangible natural resources severed from the lands or waters within the state shall be processed, refined, fabricated or manufactured into a finished product within the state of Arkansas." Representative O. E. Gates, who announced the measure, said "our natural resources are being exploited by Eastern capitalists" and maintained that "establishment of processing plants in Arkansas would bring untold wealth to the state that now goes to other areas." The measure would provide a fine of $500 a day for violation of its provisions.

The Arkansas Senate passed and sent to the House for concurrence a bill that would grant trucking companies a first lien on oil field equipment on which transportation charges are not paid.

Illinois Tax vs. Proration

An Illinois House member introduced a bill calling for a severance tax of five cents a barrel on oil, declaring it would be accepted by the industry if proration legislation was not enacted.

"I have talked with oil producers of Southern Illinois concerning the tax," said Representative Paul Powell, Vienna, author of the bill, "and while they consider five cents rather steep, most of them said they are willing to pay as long as the state does not do anything immediately in the way of proration. I, myself, am opposed to proration. As far as the five-cent rate is concerned, that can always be amended. The main thing is to get a tax on production as soon as possible. As it is, the state loses money from a fine potential source every day."

Powell estimated the tax would raise $7,000,000 annually for old age pensions. A companion bill would place the same tax against oil imported into the state.

Texas Lease Sale Set for March 4

State Land Commissioner Bascom Giles has scheduled a lease sale for March 4, on the following tracts of Texas land:

Tract 1, Sabine River in the Hawkins area, for a fixed cash bonus of $10,000 and bidding on a royalty basis with a one-eighth minimum. Tract contains approximately 60 acres.

Tract 15, Sabine River bed in Gregg County, approximately 90 acres, cash bonus of $9,000 with bidding on royalty basis. Well must be started within six months and drilled to pay or 7000 feet.

Tract 16, Sabine River bed in Gregg County, approximately 90 acres, cash bonus of $9,000 with bidding on a royalty basis. Well must be started within six months and drilled to pay or 7000 feet.

Tract 2, Trinity River bed in Henderson and Navarro counties, approximately 20 acres, $2,500 bonus with bidding on royalty basis.

Tract 1 out of Block 2, Nueces River bed in Live Oak County, approximately 10 acres, cash bonus $20, minimum royalty 15/64, bidding on amount of royalty offered above 15/64.

Tract 3-A, Lavaca River bed, Tide Water area in Jackson County, approximately 80 acres, cash bonus $10,000, bidding on royalty basis.

Fifty acres of school land in Cherokee County, D. L. Harry Survey, 16½ miles northwest of Rusk, cash $250, royalty one-eighth, bidding on a cash bonus basis.

South half of Section 144, Certificate 1167, AB&M in Starr County, 21 miles northeast of Rio Grande City, approximately 320 acres, cash minimum $2 per acre; royalty one-eighth, competitive bidding on a cash basis.

Half section No. 892, Certificate 509, Tex-Mex Royalty Company, Starr County, 22 miles northeast of Rio Grande City, approximately 320 acres, $2 per acre, royalty one-eighth, bidding on cash basis.

Pipe Lines

Southern Gas Plans Gas Line From Willow Springs

Negotiations have been started by Southern Gas Company, headed by Roger Lacy, Longview, Texas, producer, to construct a natural gas trunk line from the Willow Springs deep gas-distillate field, immediately east of the Gregg County sector of the East Texas field, to Dallas and intermediate points. Lacy is seeking a franchise to supply Dallas industrial plants with fuel, supplementing the services of two other companies. He proposes to construct a 125-mile trunk line to the city. Southern Gas Company built lines from the Willow Springs area last year to Longview, Greggton, Gladewater and Kilgore, and has franchise to serve the new Hawkins oil field, Southeastern Wood County.

Arrange Financing for 100-Mile Canadian Gas Line

Completion of financing in New York has paved the way for construction of a 100-mile pipe line from the Kinsella gas field, near Viking, Alberta, to Red Deer, Alberta, through Camrose, according to E. W. Bowness, vice president of Canadian Western Natural Gas, Light, Heat & Power Company, Calgary.

The pipe line will supply natural gas to Wetaskiwin, Ponoka and Red Deer, as well as a number of smaller communities along the route.

Forty-Six Miles of Four-Inch To Serve Four Kansas Pools

Derby Oil Company, Wichita, Kansas, announced construction plans for a 46-mile, 4-inch oil line to provide additional outlet for the rapidly expanding Chase pool, Rice County. This line will begin in the Hollow-Nikkel pool, Harvey, Reno and McPherson counties, and will terminate in Cramm pool, trending northwestward, through Wherry and Keesling pools. Buhler pool, Reno County, will also be taken in.

Capacity of line will be approximately 3500 barrels daily. Construction contract has been awarded Knupp & Son, Great Bend.

Third Line Planned for West Texas Field

Additional market relief for the Duggan-Slaughter field is due to materialize shortly through the entry of a third trunk line outlet that will be announced within a week or two. Magnolia Pipe Line Company is steadily increasing its daily runs in the west half of the field, and is providing connections to wells offsetting those of Magnolia Petroleum Company, unless they are already served by the refinery at Levelland. The Texas-New Mexico Pipe Line Company also completed a trunk line into the area late last year, but its runs are restricted to controlled production of The Texas Company and Tide Water Associated Oil Company, and are being stored in the field for the time being. The latter carrier has accumulated 19,000 barrels of stocks.

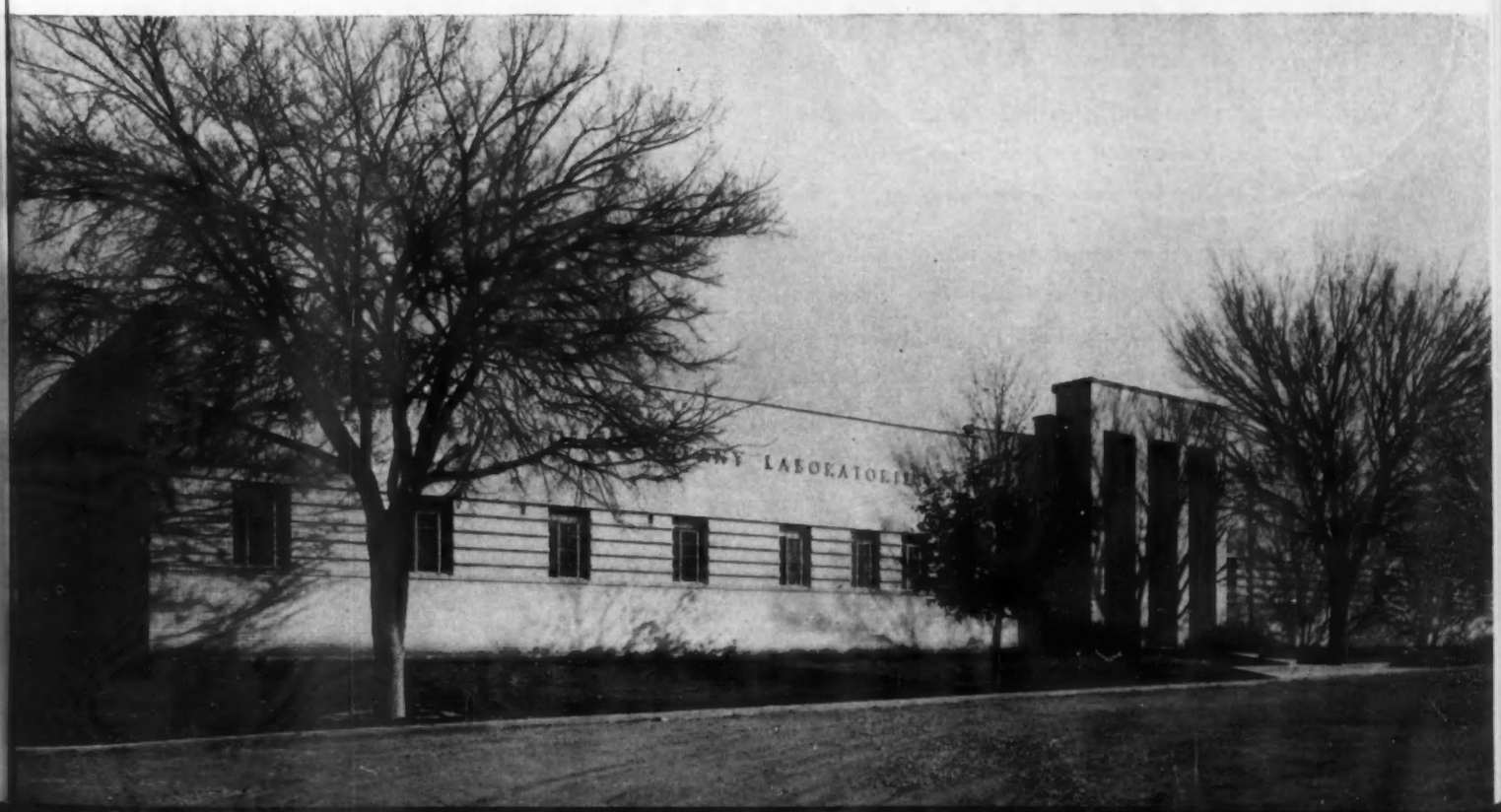
Carter Expands Production Research

THE current trend toward more extensive research in production problems by oil companies is typified in the new research laboratory of The Carter Oil Company at 1133 North Lewis, Tulsa.

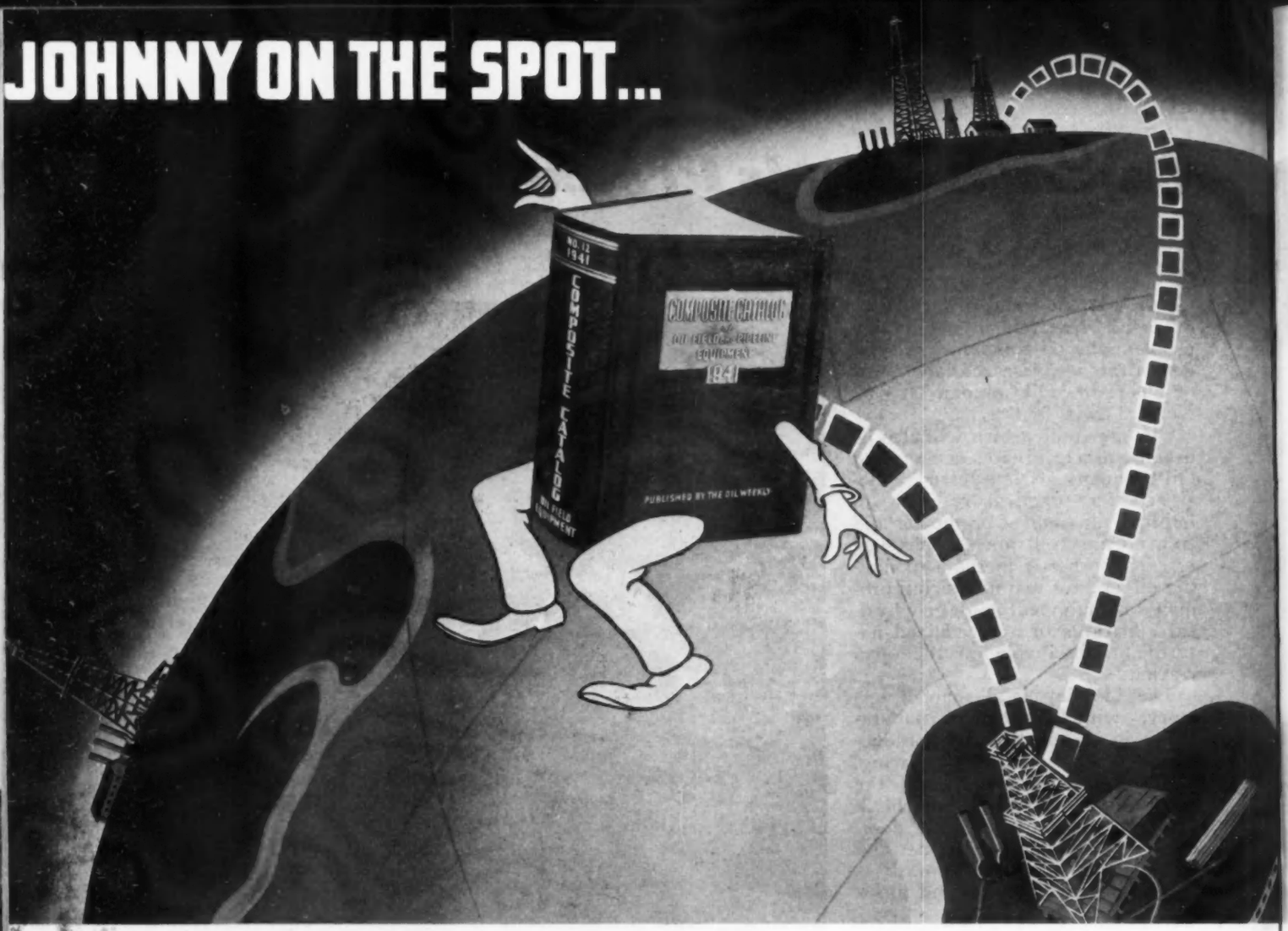
The new unit, which will also be used by other affiliates of Standard Oil Company of New Jersey, is designed for practical research to improve methods of producing and transporting oil, for geophysical research to better methods of finding oil, and for manufacturing production equipment and geophysical apparatus of a specialized nature not obtainable on the open market.

The building is T-shaped, one story, with geophysical laboratories in the south wing, production laboratories in the north wing, and the instrument shop in the east wing. Construction is of brick and tile, with concrete slab floor, steel and plaster partitions and ceiling, and steel-truss roof. It is air conditioned and sound insulated.

L. R. Hodell has been named to direct production research, Dr. P. S. Williams to supervise geophysical research, and Marvin E. Marrow has charge of the instrument shop, pictured at the right.



JOHNNY ON THE SPOT...



. . . Whether the spot is

OFFICINA OR HAWKINS

Regardless of where oil is drilled for or produced, be it Officina, Venezuela or Hawkins, Texas, The Composite Catalog is "Johnny on the Spot."

The largest and most complete catalog published for the drilling, producing and pipe line industry, the new 1941 edition contains the complete or condensed catalogs of most leading manufacturers of oil country equipment. Its more than 2200 pages of actual catalog data constitute a veritable library of the latest equipment information.

When you call, wire or write about equipment you will save time, eliminate misunderstanding and errors, and get quicker action by referring to the item by page number in The Composite Catalog.

SAVES TIME

the COMPOSITE CATALOG

OF OIL FIELD AND PIPE LINE EQUIPMENT

Refinery Runs Near Peak; Gasoline Stocks Increase

Latest statistics of the industry, covering the week ended February 1, indicated a further increase in refinery runs, almost to the largest proportions on record; a resultant interruption of withdrawals from heavy fuel oil stocks, and an exceptionally large addition to gasoline storage. Stocks of light fuel oil were seasonally reduced. Crude oil production was about unchanged, and so were crude stocks.

Refineries of the United States charged to stills 3,680,000 barrels of crude daily in the week ended February 1, according to American Petroleum Institute. That was 55,000 barrels more than average daily runs the previous week, and was only 10,000 barrels under the all-time peak runs of 3,690,000 barrels daily of the week ended June 22, 1940. The figure of 3,680,000 barrels for the new week was 7 percent above the 3,436,000-barrel daily average of January a year ago.

Production of gasoline increased sharply, having mounted to 12,424,000 barrels in the week of February 1, compared with 11,673,000 barrels in the preceding seven days. The output was 751,000 barrels larger for the week, an increase of 107,000 barrels in the daily average production.

Stocks of finished and unfinished gasoline in the United States consequently increased 2,102,000 barrels, from 88,762,000 to 90,864,000 barrels. That gain was about 300,000 barrels larger than the increase in the corresponding week last winter, when the industry was seriously disturbed over the excessive building up of the gasoline inventory, necessitated by the urgent need for heating oil. Currently, large refinery runs and heavy output of gasoline reflect urgent need for another product, heavy fuel oil, used by industry as fuel.

The present inventory of gasoline is virtually the same as that held at this time last winter, the 90,864,000 barrels of February 1 having compared with 90,975,000 barrels on hand on the corresponding date last year.

Residual fuel oil stocks totaled 100,428,000 barrels on February 1, the American Petroleum Institute reported. That was 131,000 barrels more than a week previously, the small increase having been the first since late October. In November, December and January, the industry took about 8,000,000 barrels of the heavy fuel oils out of storage, as current production was consistently short of current demand. The present inventory is about 2,000,000 barrels smaller than that held a year ago, although demand is up materially because of the national defense program and the attendant brisk industrial and commercial activity.

Gas oil and distillate fuel came out of storage in the net amount of 1,405,000 barrels, as stocks decreased to 37,634,000 barrels, with demand good in consequence of cold weather. However, the inventory still is more than 11,000,000 barrels larger than that on hand at this time last winter.

United States crude oil production averaged 3,590,150 barrels daily in the week of February 1, compared with 3,599,100 barrels the previous week and 3,498,800 barrels daily in the corresponding week a year ago. The new rate conformed almost exactly with market demand as estimated by the United States Bureau of Mines.

Crude oil stocks totaled 260,093,000 barrels on January 25, the bureau reported, as compared with 259,934,000 barrels a week previously.

Crude Oil Output Higher But Within Market Demand

United States crude-oil production showed a moderate increase of 17,550 barrels in the week ended February 8, having averaged 3,612,400 barrels daily. But the output still was within market demand, as the United States Bureau of Mines has estimated average daily demand for domestic crude in February at 3,628,900 barrels.

The increase for the nation resulted from gains in Texas, California, Oklahoma, Louisiana, New Mexico, Arkansas and Mississippi that outweighed decreases in Illinois, Kansas and a few other states.

Texas production averaged 1,344,400 barrels daily, up 9600. California was up 11,200 barrels to 615,000 daily. Oklahoma averaged 418,600 barrels a day, up 18,100. Louisiana produced 293,800 barrels daily, up 1900 barrels. New Mexico yielded 102,500 barrels daily, an increase of 1800 barrels. Illinois was down 5600 barrels to 317,900. Kansas was off 20,500 barrels, to 177,500 daily.

Heavy Fuels and Lubes Firm; Illinois Area Crude Price Up

Markets were generally firm during the past week, and there were some advances of prices of both crude and refined oils, with heavy fuel oils and lubricants in particularly good demand. Coastwise tanker chartering rates were down farther, as demand for clean boats lagged.

Effective February 1, Sohio Corporation, subsidiary of Standard Oil Company of Ohio, increased its posting for Carmi crude, in the Storms area of Illinois, from $1.05 to $1.10 a barrel.

Strength of the market for heavy fuel oil was demonstrated in advances of minimum quotations on No. 5 fuel 10 cents a barrel at New York, following which the lowest price quoted was $1.55. In other marketing districts and in the primary markets of the Southwest, prices of the heavy fuel oils remained generally unchanged, although demand was especially good.

Markets for lubricants continued good. Mid-Continent refiners reported that shipments were proceeding in favorable volume; and some materials were quoted slightly higher in the Western Pennsylvania refining district. Neutral oils were said to be particularly scarce in the latter area.

Demand for burning oil remained

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[8]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[1]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,373,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941						
January 4	3,367,200	3,600,000	260,643,000	85,530,000	42,606,000	102,563,000
January 11	3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 1, 1941	3,590,150	3,680,000	.....	90,864,000	37,634,000	100,428,000
February 1, 1940	3,498,800	[8]3,436,000	[4]237,339,000	90,975,000	26,462,000	102,666,000
Change in past year.	+2.6%	+7.1%	+9.6%	—0.1%	+42.2%	—2.2%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, January 27, 1940. [5] Lowest for year. [6] Lowest since October, 1922, due to shut down of six mid-continent states. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] January, 1940, daily average.

fairly good in most regions, but was not as brisk as previously. However, there was a large withdrawal from stocks in the week ended February 1, which indicated that there was not likely to be any appreciable weakening of the market.

The gasoline market has remained in comparatively good condition, despite recent large weekly additions to stocks. Some refiners of the Mid-Continent said they were taking gasoline out of storage, and others reported that their volume of business had been running materially above that of January a year ago.

On the Gulf Coast, refiners were asking somewhat higher prices than previously for some grades of gasoline, for either export or domestic shipment.

In several declines, rates for chartering clean tankers between the Gulf Coast and the northern Atlantic district have come down 14 cents a barrel, on the basis of gasoline, in the past 10 days, as demand for boats has been exceptionally light. Rates last paid were reported at 38 cents a barrel for gasoline, 40 cents for kerosene, and 42 cents for No. 2 fuel oil. These rates are about 30 cents a barrel lower than those which prevailed at this time last winter.

Wholesale Prices of Refined Products

REFINED GASOLINE	Range Last week (Cents a gal.)		Changes from week Before	
Oklahoma Refineries:				
60 Octane and under	3¾	4¼	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
Mid-Western Tank Car:				
60 Octane and under	3¾	4¼	...	...
63-66 Octane	4	4½	...	...
72-74 Octane	4⅝	5	...	...
New York Harbor:				
68-70 Octane	5½	5½	...	...
72-74 Octane	5½	6¾	...	+⅛
Gulf Coast:				
60 Octane unleaded	3¾	4	+¼	...
65 Octane unleaded	4	4¼	+¼	+⅛
72-74 Octone leaded	4	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	2⅜	2⅜	...	...
F.O.B. Breckenridge, Tex.	2	2	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4	4¼	...	...
42-44 water white	4⅛	4⅜	...	...
Mid-Western Tank Car:				
41-43 water white	4⅛	4¼	...	...
42-44 water white	4¼	4⅜	...	...
New York Harbor	5⅛	5⅜	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market, Group 3, basis	3⅞	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3⅛	3⅜	...	...
No. 3	3⅜	3½	...	...
Mid-Western Tank Car:				
No. 1 white	3⅞	4	...	...
No. 3	3¼	3½	...	...
New York Harbor:				
No. 1	5⅛	5⅜	...	...
No. 3	4⅛	4⅞	+¼	...

HEAVY FUEL OILS	Range Last week (Per Bbl.)		Changes from week Before	
Oklahoma Refineries:				
No. 6	$0.65	$0.65	...	...
Mid-Western Tank Car:				
No. 5	.75	.85	...	...
No. 6	.55	.60	...	...
New York Harbor:				
No. 5	1.55	1.55	+.10	...
No. 6	1.25	1.25	...	...
BUNKER C FUEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$ .80	$ .85	...	...
New York Harbor	1.25	1.25	...	...
DIESEL OIL				
(Per barrel, ships bunkers)				
Gulf Coast	$1.50	$1.70	...	...
New York Harbor	1.85	1.85	...	...
Los Angeles Basin, 27 gravity	1.20	1.26	...	...
LUBRICATING OIL				
(Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	13	15½	...	...
Neutral oil, pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	8	10¼	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	14	14	...	—½
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	19	20	...	...

Order 20-Acre Spacing for Willamar Field, Willacy County

The Texas Railroad Commission has ordered 20-acre spacing in the Willamar field, Willacy County. Wells are to be spaced 467 feet from lease lines, and 933 feet apart.

Proration, however, is on 40-acre units, with 75 percent distributed on acreage and 25 percent on a per-well basis. As much as 50 acres may be assigned to the final well on a unit. Regulations provide for 2000 feet of surface casing, cemented to the surface, and an oil string cemented 600 feet above the shoe.

United States Crude Oil Production Up Slightly

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 1	Feb. 8
TEXAS—				
Texas Panhandle	.....	.....	73,900	73,800
North Texas	.....	.....	101,200	101,100
West Central Texas	.....	.....	29,600	29,900
West Texas	.....	.....	228,500	238,300
East Central Texas	.....	.....	81,700	72,500
East Texas Field	.....	.....	375,600	375,800
South Texas	.....	.....	195,800	201,400
Texas Gulf Coast	.....	.....	248,500	251,600
Total Texas	1,312,900	1,318,873*	1,334,800	1,344,400
CALIFORNIA—				
Long Beach	.....	.....	41,600	41,800
Midway-Sunset	.....	.....	39,000	55,600
Kettleman Hills	.....	.....	39,700	35,500
Wilmington	.....	.....	84,600	83,500
Others	.....	.....	398,900	398,600
Total California	595,700	571,000†	603,800	615,000
OKLAHOMA—				
Oklahoma City	.....	.....	89,650	100,350
Seminole Area	.....	.....	102,350	104,925
Others	.....	.....	208,500	213,325
Total Oklahoma	442,500	400,000	400,500	418,600
ILLINOIS—				
Salem	.....	.....	110,000	109,500
Louden	.....	.....	69,500	63,200
Centralia	.....	.....	13,400	13,300
Other New Pools	.....	.....	120,100	120,500
Old Pools	.....	.....	10,500	11,400
Total Illinois	342,100	.....	323,500	317,900

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable (Barrels Daily in Feb.)	BARRELS DAILY FOR WEEK ENDED Feb. 1	Feb. 8
LOUISIANA—				
North Louisiana	.....	.....	69,800	69,200
South Louisiana	.....	.....	222,100	224,600
Total Louisiana	288,600	294,942	291,900	293,800
KANSAS	193,200	196,200	198,000	177,500
NEW MEXICO	100,700	106,000	100,700	102,500
EASTERN STATES—				
Pennsylvania Grade	50,000	.....	71,200	72,100
Others, Eastern	49,300	.....	20,600	20,600
Total Eastern States	99,300	.....	91,800	92,700
MOUNTAIN STATES—				
Wyoming	74,600	.....	75,300	75,100
Montana	20,000	.....	18,500	18,500
Colorado	3,900	.....	3,700	3,600
Total Mountain States	98,500	.....	97,500	97,200
MICHIGAN	47,500	40,000§	40,400	40,100
INDIANA	22,500	.....	20,500	20,200
ARKANSAS	66,100	69,969	70,100	70,700
MISSISSIPPI	16,100	.....	18,850	19,350
NEBRASKA	3,200	.....	2,500	2,450
‡Total 8 Prorated States	3,047,200	2,996,984	3,040,200	3,062,600
Total United States	3,628,900	.....	3,594,850	3,612,400

*** Estimated net basic daily allowables as of February 1. Railroad Commission estimates that actual production normally is about 3 percent under the allowable. But allowable normally increases as new wells are completed. Under February-March order, most Texas fields were ordered shut down February 1, 2, 8, 9, 15, 16, 22, 23, and 28; March 2, 8, 9, 15, 16, 22, 23, 29, 30 and 31. Texas Panhandle was ordered shut down February 2, 9, 15, 16, 23 and 28; March 2, 9, 15, 16, 23, 30 and 31.**

† Recommendation of Conservation Committee of California Oil Producers.

§ Estimate of actual production under prescribed regulations, which do not fix a definite state total allowable.

‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

U. S. FIELD OPERATIONS

Illinois

New White County Field; First Trenton Well in Salem

First Trenton-lime well in the Lake Centralia-Salem pool was completed last week, the fifteenth field in White County was opened, and Mt. Carmel, Wabash County, had its first producer within the city limits.

The discovery well of the Trenton horizon in the Salem field, Paul Rossi's Brooks 8, Section 29-2n-2e, pumped 242 barrels of oil in 24 hours after 10 days of testing. For several days the well pumped only a small amount of oil, but adjustments to the pumping equipment corrected the difficulty. It is bottomed at 4616 feet, about 100 feet in the formation. Magnolia Petroleum Company's Shanafelt 32, offset to Brooks 8, was drilling in the Trenton at 4510 feet with casing set at 4508 feet. Top of the Trenton was 4504 feet. The field's deepest test, The Texas Company's Tate 21, Section 5-1n-2e, was drilling for the St. Peter below 4700 feet. The well is being drilled tight, and is to be plugged back to the Trenton regardless of findings in the lower horizon.

White County was assured of its fifteenth oil field, more than any other county in the state, with successful completion of Mabee Oil & Gas Company's W. L. Knight 1, NE SW SE 10-7s-9e, which pumped 40 barrels in six hours from the Tar Springs at 2254-64 feet. A second well, Warren & Bradshaw's Union Ridge Cemetery 1, NE NE NW 15-7s-9e, just south of the Knight test, was drilling and a third operation in the area was getting under way. About 4½ miles from these operations, Halbert's E. P. Hubele 1, NE NW SW 7-6s-11e, on the banks of the Wabash River, cored saturation in the Palestine sand at 1990 feet, but on a drill-stem test some water showed and the operation was being deepened to lower formations. A White County test near the Gallatin County line, D. Jungbecker et al's Hayes 1, SE SE SW 16-7s-1e, was abandoned through the McClosky at 2995 feet.

First townsite test in Mt. Carmel to be completed was Hall-Jordan's Alice Canedy 1, NE 20-1s-12w, which swabbed 75 barrels of oil in 12 hours from McClosky lime. Three other operations were under way in the city, where the council permits one well to each producing horizon in every block. The test is an extension of the North Mt. Carmel field, where a surge of activity is under way following discovery of McClosky production. Formerly, all production was from the Cypress. Including the four townsite tests, there are 17 operations in the area.

A Franklin County wildcat, four miles south of production and two miles north of West Frankfort, E. S. Adkins' Orient 1-B, SE NE NW 12-7s-2e, was being put on pump for a production test. It was swabbed for several days following a shot of nitro in the Tar Springs at 2054 feet, but was having some water difficulty. Prior to the shot, the well bailed a barrel of oil an hour. In the new field four miles north of Orient 1-B, Adkins was drilling plug at Orient 2, SE SW SE 24-6s-2e, where saturation was recovered in the Tar Springs, and Shell Oil Company was about ready to complete its first test in the area, T. M. McKemie 1, NW SE SE 24-6s-2e, where casing was set to 2154 feet, an offset to Adkins' discovery well.

Benedum-Trees' Johnson 1, wildcat in Johnson County, north of Vienna, SW SW NW 24-11s-3e, was drilling below 2700 feet, headed for Devonian following an electric log to 2398 feet, through the McClosky. A company representative reported no commercial shows had been found, but apparently structures were running high enough to warrant deeper exploration. Light shows were found in the Benoist and Aux Vases sands.

Two pays were being tested in the new South New Harmony field of White County, both in formation other than that in which the discovery was completed. The discovery is a Waltersburg producer, but nearby Burr Lambert has set casing to explore the Tar Springs at Hattie Golden 1, SW NE NE 29-5s-14w, topped at 2406 feet, and Bell Brothers and Benedum-Trees both were testing Benoist saturation in the area. Benedum-Trees' Golden 1, NW NE NE 29-5s-14w, had been given a light shot of nitro in the Benoist, and Bell Brothers' Golden 1, SW SW NW 28-5s-14w, two locations east of the discovery, was being cleaned out. Northeast 1½ miles of the discovery, Bell Brothers' Morris 1 swabbed an estimated 125 barrels a day from the Tar Springs.

Location has been staked for a wildcat Devonian test in Bond County, 5½ miles south of Greenville, W. S. Tatum's S. W. Andrews 1, C SE NE SW 7-4n-2w. J. J. Broadus, Centralia, is contractor.

W. C. McBride, Inc.'s first producer in the new McKinley field of Washington County, Frieman 2, NW SE NW 29-3s-4w, swabbed 4½ barrels an hour from Benoist sand at 1029½ feet, and was being put on pump. Frieman 3 was waiting on cement after pipe was set to Benoist at 998 feet.

First offset location to the discovery well of the East Patoka field, Marion County, has been made by Gulf Refining Company, Hill 1, SW SW SW 26-4n-1e. The discovery recently was completed as a 50-barrel Cypress well.

A Clinton County wildcat 10 miles west of Centralia, W½ NW NW NW 15-1n-2w, was drilling at nearly 500 feet with cable tools. It is Ashoff's Lempen 1, which will explore the McClosky lime.

Tide Water Associated Oil Company was attempting to produce its Mario 1, NW NE SE 3-6s-6e, Hoodville pool, Hamilton County, from three formations, the Weiler, Benoist and Aux Vases. Casing has been set to the Aux Vases with drillable sections opposite the two higher formations. Present production is limited to Benoist and Aux Vases. Kingwood Oil Company was preparing to test eight feet of saturation at Moore 1, S½ SE NW 2-4s-6e, in the northern part of Hamilton County, ½ mile east of a lone producer which the company completed as a light well in the McClosky. Moore 1 was drilled to 3466 feet, and on a 33-minute drill stem test, oil rose 600 feet. In the new Dahlgren pool of Hamilton County, Witt & Krome's Gage 1, NE SE NE 34-3s-5e, was drilling at 3050 feet with formations reported running about level with the discovery. Exchange Oil Company's Silliman 1, SW NW NW 35-3s-5e, an offset to the field's discovery, was to be abandoned.

Indiana

St. Louis Added to Griffin Pool Producing Horizons

Continental Oil Company's Keck 15, SE NE SE 27-3s-14w, added the St. Louis lime to producing horizons in the two-year-old Griffin pool, Gibson County. In the south part of the field, just north of the Posey County line, the test failed to get a commercial show in the McClosky lime and was deepened to core 15 feet of broken St. Louis saturation. Casing was set at 3134 feet, hole bottomed at 3136 feet. After perforating casing and acidizing, hole filled with oil. Other tests drilled to the St. Louis in the field have failed to get commercial shows, and while no new burst of drilling is anticipated, many of the McClosky wells where production is declining may be deepened to the new pay.

Posey County may have a pool-opener 1¼ miles northeast of Griffin, with Ed Holmans' John and C. Oeth 1, NE SE NE 6-4s-14w, wildcat which had been inactive for several weeks after setting casing. McClosky pay at 2912-16 feet was acidized with 1000 gallons, and a small amount of water is believed to have been successfully shut off with cement squeeze job. Starting at surface elevation of 384 feet, the test topped the Glen Dean at 2262 feet; Cypress at 2487 feet, with saturation at 2488-2511 feet; Bethel at 2640 feet, with saturation at 2642-52 feet; Aux Vases at 2732 feet, St. Genevieve at 2770 feet.

Two locations west and one location north of Oeth 1, Holmans was drilling at 1100 feet in E. B. Mumford et al 1, SE NW NE 6-4s-13w, and location has been staked for John and C. Oeth 2, SE SE NE 6-4s-13w, immediately south

of the indicated discovery. Leaseholders in the vicinity include Gulf Refining Company, Superior Oil Company, Mahutska Oil Company and Continental Oil Company.

A new wildcat was preparing to spud in Spencer County, ¾-mile south of Hatfield, J. B. Miller et al's Basil Dooley 1, NE NW 19-7s-7w.

A Knox County wildcat in Busseron Township, near Oaktown, C. L. McGuire's M. E. Bland 1, SE NE SE 15-5n-10w, was drilling at 2450 feet with Devonian as the objective, expected at about 2700 feet. With surface elevation of 425 feet, it topped Cypress at 1223 feet, St. Genevieve at 1386 feet, with no shows through the McClosky, and St. Louis at 1590 feet.

Gulf Refining Company's Jim Burrows 1, SW NW SW 8-5s-13w, Posey County, was preparing to run electric log, with hole bottomed in the St. Louis at 3090 feet. No show was reported in any horizon. The test is 2½ miles southeast of New Harmony, and 5 miles north of The Carter Oil Company's Ed Highman 1, SW SW SE 31-5s-13w, abandoned last week at 3039 feet.

Third well in the Neiderst pool of Point Township, Posey County, Jim McCummings et al's Oakland City College 1, NW NW SE 16-8s-14w, Gulf Refining Company farmout, was cleaning out after 60-quart shot in Aux Vases sand at 2550-68 feet.

Harris-Stuart's Weldon-Strueh 2, SE SE NE 1-7s-12w, northeast outpost to the Heusler Dome field of Marrs Township, Posey County, initialed 48 barrels in 11 hours pumping from Waltersburg sand at 1715-32 feet.

In the Bufkin pool of southwest Robinson Township, Posey County, Gulf Refining Company's Dickhaut 3, SE NW SW 5-6s-12w, was drilling at 2275 feet, in or near the Cypress. Starting at surface elevation of 401 feet, Mansfield was topped at 1155 feet, and the Chester series at 1600 feet.

Kentucky

Union County Wildcat Coring in St. Genevieve

Sun Oil Company and Kentucky Natural Gas Company's Neel Heirs (N. V. Brigg) 1, Union County wildcat three miles southwest of Corydon, was coring in the St. Genevieve at 2584 feet with no signs of saturation. Starting at surface elevation of 378 feet, Golconda was topped at 2091 feet, Barlow at 2230 feet, Cypress formation at 2235 feet, Cypress sand at 2313-58 feet, and St. Genevieve at 2569 feet.

In Ballard County, a mile east of Wickliffe and far removed from production, Haynes & Thomas, Illinois operators, located Maude Carpenter 1, projected 2000-foot Devonian test.

Drilling at 3100 feet at the base or below the Ordovician age, was Sun Oil Company's closely-watched Grayson County wildcat, George Woods 1, eight miles east of Litchfield.

White and Baker Hearing

The Texas Railroad Commission has scheduled a hearing for February 13 to consider operating rules for the White and Baker field, Pecos County.

Oklahoma

West Arno Pool Adds First Wilcox as New Horizon

First Wilcox sand was opened as a new producing horizon in West Arno pool, Creek County, by Bryan Petroleum Company et al's Deere 1-A, NE SE NE 34-14n-7e, which swabbed 80 barrels of 32.5-gravity black asphaltic crude in 24 hours. Seven-inch casing was cemented in Viola lime, and Wilcox sand was topped at 3962 feet. Pay was cored at 3964-71 feet. Operators were to deepen with standard tools before completing and may test Second Wilcox sand. The pool consists of two wells, one oil and one gas, both from Prue sand. Four dry holes surround shallow production. Bryan Petroleum Company, Wilcox Oil & Gas Company and Sunray Oil Company have communitized a 160-acre block for Wilcox sand development.

Oklahoma Steering Committee on Oil Field Nomenclature designated new names for a number of Oklahoma discoveries. Okemah West was the designation given to Deep Rock Oil Corporation's Davis 1, SW SE NE 20-11n-9e, which gauged 58,284,000 feet of gas and 80 barrels of distillate daily from Hunton lime at 3916-60 feet. Oklahoma Natural Pipe Line Company has pinched production to 3,000,000 feet, and distillate is being trucked to Weleetka for Otha H. Grimes.

North Okemah was the designation for Keener Oil & Gas Company et al's Dudgeon 1, NE SW SE 36-12n-9e, which last week was completed for 669 barrels of 35-gravity oil per day from Gilcrease sand at 3084-3110 feet. The Texas Company correspondingly changed the name of its North Okemah pool, Okfuskee County, to Cowan pool. The discovery, Cowan 1, SWc 5-11n-10e, flowed 474 barrels in 24 hours from Hunton lime at 3720 feet, and was completed on July 30, 1940. Cowan pool has three producers with pays in Hunton lime, Gilcrease sand and Wapanucka-Cromwell zone. A semi-wildcat is drilling in the area.

East Pawnee pool was the designation for Alma Oil Company's Hill 1-A, C N½ NW SW 1-21n-5e, completed January 14 for 500 barrels of oil and 640 barrels of water per day. Pay is Misener sand at 3363-67 feet. This discovery is a west offset to an old abandoned Wilcox sand producer.

W. A. Delaney, Jr., and Atlantic Refining Company's Clark 1, NEc SE 30-8n-7e, Seminole County, was named North Little River pool. Pay is Dolomitic sand at 4283-89 feet. In 24 hours, flow tested 364 barrels of 40-gravity oil through 2½-inch open tubing with 1,600,000 feet of gas.

Kerlyn Oil Company's Cherry 1, SE NE NW 32-8n-5e, between Maud and St. Louis pools, Pottawatomie County, has been included in St. Louis pool, as the producing horizon is typically St. Louis structure, pay being Dolomite. Maud pool produces solely from Misener sand. Hole was carried to 4330 feet, but plugged back to 4325 feet with lead wool when water intruded. With oil level standing at 2300 feet, pump was installed and the well pumped 113 barrels of 40.7-gravity oil in 24 hours, cutting 8 percent water. Dolomite was topped at 4290 feet, and 7-inch casing cemented at 4322 feet. This wildcat is surrounded by deep dry holes.

West Hewitt pool, Carter County, was designated for development in sections 20 and 21-4s-2w, which is separated from main Hewitt pool by a number of dry holes.

Between East Seminole and Bethel pools, Seminole County, Paul J. McIntyre et al's Brown 1, SW SE NE 14-9n-7e, was a location. K. G. F. F. Oil Company and Portable Drilling Company spudded Camp 1, SWc 6-11n-9e, 1½ miles east of Dill pool, and immediately west of Castle, Okfuskee County. Operators control a seismograph block containing 440 acres. Contract will be Wilcox-sand or 4200 feet.

Francis Oil & Gas Company staked a wildcat test at Wilkins 1, SW SE SW 8-7n-17w, two miles north of Hobart pool, Kiowa County. Gled Oil Company and P. J. McIntyre et al's Watkins 3, SW NW NW 20-7n-17w, was killed with weighting mud and cement after blowing wild for several days. Gas gauged in excess of 30,000,000 feet per day, coming from lime at 855-860 feet. Hole is bottomed at 900 feet in Pontotoc lime, and 8-inch casing suspended at 860 feet. A large lime crevice is believed the source of trouble, as 350 sacks of cement and 150 sacks of weighting mud practically disappeared in the hole. Circulation was lost a number of times while trying to run cement. Three new tests were spudding in Hobart pool: Gled Oil Company's Mitchell 1, NW SW SE 19-7n-17w; Phillips Petroleum Company's Warner 4, SW NE SE 19-7n-17w, and Shell Oil Company's Kelsey 2, SW NW SW 20-7n-17w.

Keener Oil & Gas Company et al have rig on ground at Walker 1, NW SE SE 36-12n-9e, east offset to the North Okemah pool discovery, Okfuskee County.

Dorr & Ragsdale et al's Riley 1, NEc SE 34-13n-1e, 1¼ miles southeast of Jones pool, Oklahoma County, cemented 115 feet of 12-inch surface pipe.

Gulf Oil Corporation's Hess 1, C NE NW 33-23n-13w, deep wildcat six miles southeast of Galena in Woods County, and bordering Major and Alfalfa counties, was being pumped down with mud at 8367 feet in Wilcox sand. Simpson was topped at 8055 feet, and core at 8306-09 feet recovered 18 inches of hard white sand. A core at 8341-43 feet recovered one foot of hard white sand. Three separate core heads were necessary for the latter recovery. When bit reached 8348 feet, Wilcox sand had a hardness that required a change of bits every 3 feet.

Shell Oil Company's Davis 1, SWc 18-13n-9e, 2 miles south of Welty, Okfuskee County, swabbed salt water when perforated with 26 shots in Hunton lime at 3940-66 feet, and treated with 1000 gallons of acid. Hole was plugged at 4127 feet in Wilcox sand.

Frank Wagseter et al's Smith 1, SE NW SE 15-14n-19e, 2 miles southeast of Jolly-Patton pool, Muskogee County, was a failure in lime at 960 feet. In Maramac sector of Pawnee County, Tom Greer et al temporarily abandoned Issacs 1, NW SW SE 25-20n-6e, after setting 55 feet of 12-inch surface pipe.

Magnolia Petroleum Company's McKoy Heirs 1, SWc SE 16-5n-11e, west of Stuart and 7 miles east of Calvin pool, Hughes County, logged Wilcox sand at 6920 feet, and was rotating below 6935 feet in hard dry white sand.

W. F. Eppler et al's McBirney 1-A, C SW SW 12-18n-13e, Jenks area, Tulsa County, logged dry sand at 1098-1120 feet,

and shut down at 1250 feet. Oswego lime was dry at 510-20 feet.

Leader Oil Company's Vernon 1 NW SE NW 30-19n-8e, wildcat in Northern Drumright pool, Creek County, topped Arbuckle lime at 3715 feet, but was dry at 3750 feet. Only a small show of dead oil and water was recovered. Operators will test Red Fork sand at 2620-47 feet, and Bartlesville sand before plugging.

Forest City Basin

McLaughlin Area Receives First Wilcox Sand Test

Four miles southeast of McLaughlin oil and gas pool, Leavenworth County, Kansas, Dan McLaughlin & Sons et al's Thorp 1, C NE NE 27-10s-20e, provided the initial Arbuckle-lime test for this shallow area. Lime was penetrated at 2163 feet, and good oil stains logged at 2164-87 feet. A fishing job developed at 2209½ feet. This important wildcat showed 70,000 feet of gas at 1359-60 feet, cut Mississippi lime at 1395-1742 feet, topped Hunton at 1793 feet, Viola 1965 feet, Wilcox sand 2088 feet, and cemented 5-inch casing at 2122 feet. Stains were recovered at 1861-67 feet in Hunton lime, and in base Viola at 3081-88 feet.

One Missouri wildcat was shut down and another was drilling below surface pipe. J. Flory and J. A. Kirby et al's Meyer 1, SE NE NW 27-62n-39w, Holt County, cemented 659 feet of 10-inch pipe, and was deepening. E. V. Jackson and Fred Rust et al's Hays 1, C NE NE 22-66n-42w, Atchison County, topped Topeka lime at 277 feet, and was shut down at 1120 feet.

In the Nebraska sector, McNulty & Bass et al's Cander 1, SW NW SW 15-2n-13e, Richardson County wildcat, based Kansas City at 1197 feet, topped Hunton 1789 feet, Maquoketa shale 2040 feet, Viola 2454 feet, and was fishing for 5-inch casing at 2602 feet. Electric log showed oil possibilities in both Hunton and Viola limes.

Four miles south of Auburn, Nemaha County, Frank Engles et al's Wheeler 1, NEc 9-4n-14e, was abandoned in dry Hunton lime at 2658-2745 feet. Bow & Arrow Oil Company's Shrieffer 1, C N½ NE SW 20-5n-14e, 2 miles west of Auburn, was moving in rotary tools to deepen to Hunton lime. Eight-inch casing set at 1726 feet was pulled from hole, bottomed at 1792 feet.

Golden Rod Oil Company abandoned Sporrer 1, SEc 8-11n-13e, 7 miles southwest of Plattsmouth, Cass County, at 1356 feet in Granite, topped at 1354 feet. Same operators moved a mile south of this failure to stake location for Fleming 1, C N½ NE NW 20-11-13e, a wildcat.

In Falls City pool, The Ohio Oil Company's Sandrock 6, SW NW NE 20-1n-16e, swabbed 70 barrels of oil in one hour, indicating a 1500-barrel producer after acid treatment. Same operators were drilling with rotary at Sandrock 7, NW NE SW 20-1n-16e, below 1500 feet.

Two tests spudded in the one-well Shubert area, Richardson County. Indian Territory Illuminating Oil Company's Schaible 1, C SW SW 29-3n-16e, set surface pipe and was drilling, and Garretson & Kinsley's Bankers Life 1, C SW SW 30-3n-16e, set 70 feet of 8-inch casing.

Kansas

New Pools for Graham And Ellis Counties

Gulf Oil Corporation's Boller 1, C E½ SE SE 29-7s-22w, four miles northeast of Hill City and eight miles east of Penokee pool, Graham County, topped Arbuckle lime at 3837 feet, and cored to 3858 feet to recover good oil shows with good porosity, indicating a new pool. A fishing job has developed. Low-gravity crude has failed to retard wildcatting in the county.

Stearns Drilling Company opened a new pool at Witt 1, C S½ NE SW 28-12-16w, 1¼ miles northwest of the one-well Emmeran pool, Ellis County. Arbuckle lime was topped at 3609 feet, and a good show of oil was logged at 3609-16 feet. Hole was deepened to 3626 feet without further shows. Without acid treatment, the wildcat swabbed 56 barrels of oil in four hours. The Kansas Conservation Commission designated the area as North Emmeran pool. Lansing lime was logged at 3342 feet, with a show of oil at 3342-71 feet, but hole filled with water at 3372 feet. Kansas City lime was based at 3545 feet, and 6-inch pipe was cemented at 3452 feet.

Ewers-Simpson Oil Company et al's Bundy 1, C SW SW 12-9-22w, four miles west of Morel pool, Graham County, topped Lansing lime at 3564 feet, and Arbuckle lime at 3869 feet. A saturated core was recovered at 3874-79 feet, operators ran casing for a test. Phillips Petroleum Company has all acreage surrounding the test, with Shell Oil Company holding quarter-sections to the northwest and southeast.

Fain Drilling Company's Thole 1, C E½ SE SE 23-21-12w, 2 miles north of Max pool, Stafford County, topped Arbuckle lime at 3595 feet and took first core at 3598-3601 feet, recovering 1½ feet of good porosity and saturation, heavy black. A second core, showing better than the first, was pulled at 3602-07 feet, recovering 4½ feet of porous dolomite with fair saturation. Five-inch casing was cemented at 3593 feet and standard tools rigged up to drill plugs and test.

Fred Steckel et al's Fee 1-A, C S½ SW NE 11-20-12w, south of Ernsting pool, Barton County, drilled plugs in Arbuckle lime at 3379 feet, and hole filled 100 feet with oil. Treatment with 500 gallons of acid failed to increase fluid volume, and reacidization with 1000 gallons gave no further increase. Operators were to continue testing. Arbuckle lime was topped at 3353 feet, and 5-inch casing set at that point.

Bunting, Dowling & Skow et al's Mantz 1, C W½ SW NE 17-19-10w, two miles north of Silica pool and three mile east of Eberhardt pool, Rice County, drilled plugs with standard tools at 3345 feet in Arbuckle lime, and bailed 5 gallons of oil per hour. After treatment with 300 gallons of acid, bailer recovered only 2 gallons of oil per hour. Testing will continue with increased acidization. Log disclosed Anhydrite topped at 535 feet, Topeka 2610 feet, Lansing 2983 feet, Sooy Conglomerate 3308 feet, and Arbuckle lime 3322 feet. Five-inch was cemented at 3323 feet.

Isern Brothers et al's Lillard 1, C W½ SW SE 6-16-11w, 2½ miles west of Davidson pool, Barton County, topped Arbuckle lime at 3271 feet and cored 3274-78 feet for no show. Topeka lime was logged at 2605 feet, Lansing topped at 2968 feet, Conglomerate 3255 feet, Conglomerate sand 3258-60 feet for a show of oil and core at 3260-65 feet recovering 2 feet of sandy shale, chert and lime without shows. Additional cores were to be taken in Arbuckle.

Two miles northeast of Orth pool, Rice County, Bradley Oil Company et al's Rolf 1, C N½ NW NW 24-18-10w, cut Anhydrite at 442 feet, Topeka 2528 feet, Lansing 2947 feet and was drilling below 3300 feet. Hinkle Oil Company's Kitchen 1, C W½ NW NE 11-18-9w, two miles southeast of Lorraine pool, Rice County, penetrated Anhydrite at 417 feet, Lansing lime 2883 feet, and was rotating around 3425 feet.

Earl Wakefield's Holland 1, C E½ NE SE 30-13-13w, three miles east of Russell pool and 3½ miles north of Gurney pool, Russell County, was underreaming 8-inch casing at 2400 feet after showing gas and 4 barrels of water per hour at 2380 feet.

Hagen pool, Barton County, was extended ½ mile northeast by Herndon Drilling Company's Hagen 1, CNL NE SW 20-20-11w, Barton County. A potential of 330 barrels was established in 24 hours from Arbuckle at 3344 feet.

West Texas

Waples-Platter Outpost Flows To Start Long-Term Program

Flowing production was developed by Geo. P. Livermore, Inc., and Tom Sloan's Ownby-Shell 1, C NE NE Section 502, three miles northeast of the Waples-Platter two-well pool, Yoakum County, thereby providing the start of a long-term drilling program. The outpost produced 1,200,000 feet of gas from regular Permian at 5160-5216 feet, and sprayed one barrel of oil hourly natural from porous lime at 5227-75 feet. A profitable producer is likely to follow the customary treatment with acid.

Shell Oil Company contributed acreage and posted an $8500 dry hole contribution, retaining ⅛ over-riding royalty under the five 80-acre spreads, in order to obtain a test in the northeast portion of its Waples-Platter discovery block. Ownby-Shell 1 logged top of Yates frosted grains at 3390 feet, and first brown lime at 4330 feet, with an elevation of 3558 feet. Top of San Andreas lime was called at 4690 feet, being 45 feet higher than Geo. P. Livermore, Inc.'s Waples-Platter 1, nearest produc-

er, which flowed 161 barrels of 31-gravity oil initial after using acid in broken saturation at 5219-97 feet, with an elevation of 3553 feet. The latter and the discovery did not have any appreciable volume of gas.

Amon Carter's Wasson 4-D, Gaines County sector of the Wasson field, was drilling at 10,070 feet in extremely hard chert and lime. It is credited with having used 60 rotary bits in negotiating the last 75 feet of hole. Unless the formation softens, the test will be plugged back to try for production in promising oil saturation passed up at the 7100-foot level, while a commercial producer is assured from broken pay at 6274-6610 feet.

Appearance of gas in the Upper Permian along with an unusually high structural position automatically brands Gulf Oil Corporation's W. N. Waddell 17, C E¼ of E¼ H&TC Section 15, Block 3, southwestern Crane County wildcat, as a potential pool opener. It is 4½ miles south of the Sand Hills field, and on a strike with the latter and the Abell deep pool, Pecos County. Waddell 17 threatened to blow out from gas pay at 2654 feet, with an increase at 2662-70 feet, and was drilling at 3390 feet. Top of Yates was called at 1297 feet, with an elevation of 2463 feet, being 215 feet higher than a 6829-foot failure 2¾ miles east. Geophysical and subsurface information outlines a major structure, extending northwest to southeast. Gulf Oil Corporation's Waddell 16, C NW PSL Section 28, Block B-26, provided the latest prolific well for the northeast extension sector of the Sand Hills field in establishing a potential of 8263 barrels of 35.5-gravity oil and 4,544,000 feet of gas from lime at 4352-4533 feet.

Operations in the Abell area increased to six with starting of a 4-mile southeast outpost, involving Stanolind Oil & Gas Company's Conroy-Davis Unit 1, center Lot 8, H&GN Section 31, Block 9. It is on acreage recently acquired from George T. Abell et al. Magnolia Petroleum Company's Markey 1, ½ mile northwest of the Abell discovery, resumed drilling with tools after landing 7-inch at 5249 feet. Top of Simpson was called at 4800 feet, or 2409 feet subsea, being 46 feet low. The company's Sharp-State 1, 1¼ miles northwest of the producer, was drilling at 4811 feet, with an elevation of 2395 feet, and Baldwin-State 1 was drilling at 4300 feet.

Culbertson & Irwin, Inc.'s Heiner 1, Pecos County wildcat and in the Byrne sector of the Pecos Valley district, tentatively qualified as a pool opener from Ellenberger in testing 160 barrels of fluid, 45 percent bs&w, on 24-hour swabbing test after using 9500 gallons of acid at 5128-5541 feet. The hole had been plugged back from sulphur water at 5659-65 feet, but the shutoff was not complete. Additional acid was to be used after plugging back to 5527 feet.

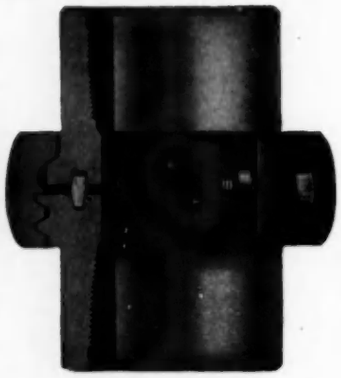
Phillips Petroleum Company's Cowden-Embar 1-A, C SE SE T&P Section 6, Block 44, northern Ector County, qualified as the first wildcat completion in the district for the year in flowing 34 barrels of 35.5-gravity oil and 3 barrels of water initial through choke after acidizing broken pay at 4210-4312 feet. This strike is 2⅞ miles south of the company's small gasser in Andrews County and is 4 miles north of nearest production in the Goldsmith field. The company's Cowden-Embar 2 and University-Andrews 1, projected Clear Fork-lime tests, were drilling at 5480 feet and 5685 feet, respectively.

Fuhrman Petroleum Corporation's Lockhart & Brown 1, Andrews County wildcat, found water in the Clear Fork at 5380-5600 feet, and prepared to acidize after plugging back to 4558 feet.

Magnolia Petroleum Company is reported to be contemplating a deep test in west central Andrews County, with site tentatively assigned to PSL Section 1, Block A-50.

Roeser & Pendleton, Inc.'s Hayes 1, ¼ mile north of the Quito gasser, Ward County, has been cased with 7-inch pipe at 4912 feet to try for completion in broken oil saturation in Delaware sand at 5089-5184 feet. Two drill-stem tests indicated possible oil production, but the gas flow was lacking. Top of Delaware lime was called at 5041 feet, or 2295 feet sub sea, being 32 feet low, while the sand zone topped at 5083 feet, is 42 feet low.

Magnolia Petroleum Company has authorized two outposts for the north portion of the Duggan-Slaughter field, Hockley County. A mile extension will be sought in drilling Mabel Wilson 1, southwest corner Labor 8, League 42, Kaufman County Survey. The company's Slaughter 1, southeast corner Labor 24, League 42, flowed at rate of 624 barrels initial through choke after using 10,500 gallons of acid at 4958 feet and rig has been skidded to northeast corner of the tract.



High Pressure Steel Union
6,000 lbs. Test

Survival
OF THE
Fittest

During the seven years that the RED-REX "Quick Joint" Pipe Union has been making life easier for oil men, numerous other unions have come on the market, flashed momentarily, and then disappeared. Today, RED-REX Unions installed seven years ago are still giving trouble-free performance. When you use RED-REX you're sure to get:

STRENGTH...SPEED...SAFETY

Strength That Whips the Toughest Conditions

Whether they face the extreme pressures and temperatures of mud and super-heated steam lines, or the normal operating conditions of tank battery hook-ups, RED-REX Unions have the strength to do the job. They're built tough enough to meet and whip the worst conditions.

Speed That Means Money Saved

RED-REX Unions are fast. They save time and money with their quick, simple action. A few turns one way or the other makes or breaks the joint, and corrosion won't stick them.

Safety That Eliminates Accidents and Repairs

RED-REX Unions are built in a complete range of sizes and pressures. Every Union can withstand operating conditions far in excess of those for which it is tested and rated. You need never fear costly accidents and expensive down time with RED-REX Unions.

AND BEST OF ALL—RED-REX Unions are economical. Their low initial cost; the time they save; and the renewable bronze seal ring which is interchangeable throughout the entire line, mean real economy and greater profits. Start specifying these money-saving "Quick Joint" Unions on all your jobs.

OIL CITY BRASS WORKS
FOUNDERS · MANUFACTURERS · MACHINISTS
BEAUMONT, TEXAS, U. S. A.
EXPORT OFFICE: 19 Rector St., New York City
HOUSTON OFFICE: 634 No. Edgewood St., Phone W-6-1739

East Texas

Low Markers Suggest Smaller Producing Limits for Hawkins

Substantial shrinkage in the prospective producing area of the Hawkins field occurred when W. L. Goldston et al's Osborne-Sun 1-A, located 6600 feet south of townsite production, appeared doubtful of reaching the Woodbine sand within the oil-producing contour due to its low structural position. This outpost logged top of Pecan Chalk between 3260-90 feet, with an elevation of 301 feet, being 405 feet low, and was drilling at 4550 feet. Top of Austin chalk was placed at 4420 feet by drilling log, but sample analysis at 4335 feet indicated the Austin had not been reached. The test is about 7000 feet west of a failure in Woodbine at 5135-5330 feet that preceded the field discovery, and will provide the fourth control point in tentatively outlining the productive limits of the dome.

East and west outposts now underway will have considerable bearing on projecting the trend of production in these directions at Hawkins. A. A. Folsom and Red Iron Drilling Company's Prince 1, located 2350 feet southwest of Manziel et al's junked sub-Clarksville gasser, which is a mile northwest of townsite production, was drilling at 3500 feet, having logged Pecan Chalk at 3110-3350 feet with an elevation of 390 feet. On the above marker it reveals a moderate drop in the structure to the west, but is safely within the oil-producing contour. Bill Urbanic et al's Snider 1, 2½ miles east by north of townsite production, was drilling at 850 feet.

Humble Oil & Refining Company has moved in six rotaries, and may double this number in the near future if competitive drilling within and near the townsite fulfills expectations. The company has not started drilling on any of its announced tests late last week.

Flanagan & Nicholson's Hale 1, northern Smith County wildcat and 5 miles southwest of the Hawkins townsite, was drilling at 4750 feet. It is low on structure, having logged Pecan Chalk at 3220-3430 feet, and top of Austin chalk at 4616 feet, with an elevation of 330 feet.

Dry gas production from the Sub-Clarksville sand was included with the oil flow from the Woodbine when C. W. Johnson et al made initial production test of Lynch 1, third producer for the townsite sector of the Hawkins field. The well flowed 25 barrels of 20-gravity oil hourly through ½-inch tubing choke, and the gas volume was estimated at 6 to 8 million feet daily through similar choke and casing. This production was from 24 perforations opposite Woodbine saturation at 4810-4848 feet and 48 perforations opposite Sub-Clarksville sand at 4179-86 feet. Broken Woodbine pay was logged at 4521-4856 feet, with 5½-inch pipe at 4870 feet, or 1 foot off bottom. Lynch 1 occupied the highest structural position through having logged top of Woodbine series at 4364 feet with an elevation of 441 feet.

Anticipated production gains at Hawkins is credited with having caused a sharp curtailment of crude purchase nominations for the Talco field's 14- to 24-gravity oil. The base allowable of the latter was cut 8793 barrels to 17,250 barrels daily effective February 1, causing the well allowable to drop from 37 to 24 barrels daily. Talco has 732 producers, which were averaging 35.9 barrels daily prior to the reduction. The allowable of the Sulphur Bluff field's 73 wells remained unchanged at 4375 barrels daily.

Delta Drilling Company and Sells Petroleum, Inc.'s Beckham 1, Wood County wildcat on the flank of the Haynesville salt plug was abandoned at 6520 feet. Top of Pecan Chalk was called at 5065 feet, with an elevation of 356 feet, making it one of the lowest tests, structurally, in the Woodbine basin.

Gulf Oil Corporation's Venters 1, west offset to the Pittsburgh pool discovery, flowed 2 barrels of oil hourly through bridge formed after shooting broken pays between 7942-8039 feet with an aggregate of 142 quarts of nitro. The hole was carried to 8107 feet after cementing 5½-inch pipe at 7841 feet, then plugged back to 8048 feet. This second producer for Camp County is expected to flow steadily when shot cavings are removed, and tubing installed. The discovery has flowed its 100 barrels daily allowable since late last August.

Gulf Oil Corporation and Farrell Drilling Company's Bevill 1, Horn Hill prospect, Limestone County, tested rotary mud and clear water after perforating opposite Pettit at 4770-80 feet, having plugged back from water in the Travis Peak section at 4892-5520 feet to 4865 feet. Additional perforations are to be made opposite the Pettit, topped at 4737 feet with an elevation of 506 feet.

North Texas

Bend Horizon at Hull-Silk Commanding Attention

The Bend oil horizon in the Hull-Silk field promises to embrace more territory than anticipated, and is commanding greater attention of operators because of the higher allowable assigned such wells. Helmerich & Payne, Inc. et al, with two prolific wells on production, have three outposts near completion. The group's L. F. Wilson 1-A, westernmost location for the field, logged top of Bend at 4606 feet, and halted in saturated lime at 4611 feet to cement 7-inch pipe at 4607 feet. Emma Jones 1-A, a short distance to the northeast, entered the Bend at 4624 feet, with broken saturation at 4629-41 feet, and halted at 4695 feet to run pipe. A northeast extension for the deep zone is indicated by the group's Shephard 7, which logged broken pay at 4615-41 feet, with top of Bend placed at 4565 feet. Blackwell Oil & Gas Company and Helmerich & Payne, Inc.'s Wilson 11 flowed 90 barrels oil the first hour after using 1500 gallons of acid at 4612-4629 feet in Bend, topped at 4567 feet.

King Oil Company et al's Taylor 1, wildcat on a strike between the Hull-Silk and Mankins fields, is a prospective Mississippian lime producer, having filled 400 feet with oil after perforating pipe at 4925-36 feet. Swabbing test was underway late last week after using 5000 gallons of acid under an oil load, and a gain in the gas yield was noted before recovering the mixture. Taylor 1 logged top of Bend at 4672 feet, Mississippian at 4929 feet, and drilled dry Ellenberger at 4963-5055 feet. Walter Gant and Barney Feagin's Curry 1, 1¾ miles southeast of the Vogtsberger pool, filled 1000 feet with cut-oil and emulsion after standing four days following use of 3000 gallons of acid in Ellenberger at 5370-91 feet. Adams Oil & Gas Company's Powell 1, projected 5200-foot test and ½ mile east of Archer City, logged several promising oil shows in the 4000-foot Strawn, and was drilling at 4260 feet. Top of Bunger and Home Creek lime markers were called at 1744 feet and 2045 feet, respectively.

Drilling was halted last midweek on Amon G. Carter et al's Allen 1, western Denton County wildcat, after establishing a depth record for the district with hole bottomed at 9025 feet in Ellenberger, topped near the 8800-foot level. Rainbow shows of oil appeared with rotary returns in drilling the latter formation. Plans called for the use of formation tester before applying for plugging permit. Top of Viola was tentatively called at 8125 feet, and Simpson, middle Ordovician, at 8200 feet.

Baylor Canyon-Lime Strike Indicated

Fourth Canyon-lime strike in eastern Baylor County was in prospect as result of British-American Oil Producing Company's Claude Cowan 1, SEc T&NO Section 102, A-1311, logging oil saturation at 2537-47 feet. String of 4½-inch pipe was cemented on top of the Palo Pinto member of the Canyon series at 2537 feet for a production test. This wildcat is 2¼ miles northeast of the company's Turbeville 4-well pool, which was discovered last November at the same level. The Turbeville area is 2¼ miles north of the Seymour 2500-foot pool, which has 17 pumpers and six failures. L. T. Burns et al's Fee 1, SEc NE T&NO Section 73, seven miles northeast of the Cowan ranch prospect, failed to produce in the Canyon or the Strawn, and operations were halted at 4775 feet. The latter is three miles northwest of Phillips Petroleum Company's Arthur 1, Archer County wildcat that was abandoned in July, 1938, in Ellenberger at 5340-5446 feet, with nominal oil saturation at 5380-95 feet. Another deep test is pending near the latter.

Shell Oil Company's Wright 1, south edge of the Antelope two-pay pool, southwestern Clay County, produced 127 barrels oil and 31 barrels of water on 9-hour swabbing test after perforating pipe at 3189-90 feet. The test was drilled to 3600 feet, then cased with 4½-inch pipe at 3581 feet. No shows were encountered in perforating pipe at 3228-30 and 3185-89 feet. Exclusive of the above test, the company has completed 14 wells in the 3100-3200-foot Strawn and two in the 3500-foot sand

without a failure. However, other interests drilled failures immediately northwest and west of the discovery block.

Development of the Hapgood deep pool, Clay County, has been temporarily halted by abandonment of Norwood-King Oil Company et al's Hapgood 3, 1260-foot east outpost, in Ellenberger at 6480-6530 feet. The first two tests by the partnership on the discovery block made flowing wells from the 5900-foot Bend conglomerate. However, a west offset to the discovery proved dry, although higher on structure, and a southeast offset to the original well produced water with a small initial flow. Clay County has three wildcats and a semi-wildcat that were due to be carried to the Bend, or lower. Shell Oil Company's Coleman 1-A was drilling at 3010 feet. Carlos Wagner et al's Thaxton 1 was drilling at 4460 feet, and Bridwell Oil Company's Myers 1 was drilling at 3130 feet. L. T. Burns et al's Southerland 1, northeast of the Burns-Browning pool, was drilling at 1450 feet.

Gulf Oil Corporation's Worsham-Spring 4, west outpost for the Ringgold pool, cemented 7-inch at 5671 feet, having topped the Bend at 5666 feet, and no shows were logged in drilling to 5691 feet. The company's Spring 1, 2½ miles southwest of the pool and adjacent to abandoned producers in the original Worsham Strawn area, was drilling at 1970 feet. Sinclair Prairie Oil Company's Hawkins 1, Montague County wildcat and two miles southeast of the Ringgold townsite, abandoned in Ellenberger at 5806-5910 feet, having checked 45 feet low on the latter marker when correlated with the company's Milam failure, located a mile to the southwest. W. B. Omohundro et al's Parr 1, two miles northeast of Ringgold, was drilling at 3990 feet. J. G. Hammond, Inc.'s Jester 1, near Mallard, resumed drilling at 6505 feet, and logged broken conglomerate, carrying oil odor, at 6505-17 feet, and was drilling at 6605 feet. Top of Bend was called at 6282 feet.

The Texas Company's Hutchinson 1, northwestern Grayson County wildcat and two miles east of a 6022-foot failure, was plugged at 5545 feet after perforating pipe opposite nominal saturation passed up between 2468-2583 feet. It is credited with having established the presence of a fault between the two tests.

Southwest Texas

North LaWard, Jackson County Seems Certain to Produce

North LaWard in Jackson County, long considered a class A prospect, became a virtual certainty to produce as the Humble Oil & Refining Company cored a saturated Marginulina sand at 5207-35 feet. A drill-stem test with seat at 5210 feet recovered 2070 feet of 23.5-gravity oil and 90 feet of mud and sand, with 70 pounds pressure, in 10 minutes, through ½-inch top and bottom chokes. Drilling was nearing the 6000-foot level and is due to continue to at least 6500 feet.

In Aransas County, Humble Oil & Refining Company had reached 10,000 feet in Charles Bay-State 1, two miles northeast of Lamar, and was drilling. It likely will be carried much deeper before attempts are made to test sands encountered at upper levels.

Continental Oil Company's St. Charles 3, bottomed at 11,472 feet, is testing through perforations above that level. The well is in the Charles field of Aransas County and is attempting to open the deepest production in South Texas. It already has progressed to the second deepest level of any test ever drilled in this portion of the Gulf Coast.

Stanolind Oil & Gas Company's Thompson 2, one mile northwest of the gas wells in the Riverside field of Nueces County, was flowing gas and distillate with wash water through ⅛-inch choke after perforations were made 6372-76 feet. The well had not fully cleaned and was showing 1200 pounds working pressure. The test is opening a new Frio zone for the field, 1300 feet below the regular sand.

Humble Oil & Refining Company's Flour Bluff 6-D, in the East Flour Bluff field, had progressed to below 8412 feet and was going ahead. It is to test a sand series in the Frio zone. The field sand is at 6800 feet.

Seaboard Oil Corporation was opening a new deep pay for the Luby field of Nueces County with J. P. Luby 9. The test cored a sand at 7308-13 feet, but on drill-stem test recovered some salt water. Perforations were made at 7310-12 feet and the well was being washed in.

Brauer, Beacham and West's Atkinson 1, Ayers Survey, and 2 miles northeast of Calliham in Live Oak County, was abandoned at 913½ feet. It is expected that another shallow test will be drilled. Sands with oil odor were found at 893-96 feet, 898-901 feet and shaly sand with oil show 901-05 feet.

Still Testing Wilcox Discovery

Installation of bottom-hole choke is expected to lower gas ratio of McMurrey Refining Company et al's Allen & Miner 1, discovery of a new Wilcox sand oil field, and first production in Lavaca County. The well made a large volume of gas and sprayed about 150 barrels of 50-gravity amber distillate per day through 3/16-inch choke. Pressures stood at 2750 pounds on tubing and 3000 pounds on casing. The well was testing from perforations at 8468-71 feet, bottom of hole being 8524 feet. Wilcox was topped at 8413 feet. The wildcat is in the M. Muldoon Survey and near the town of Vienna.

In Colorado County, Shell Oil Company will make attempts to open Wilcox sands more than 1000 feet below the top of that formation. Plow Realty Company 3, northeast side of the Sheridan field, drilled to 10,120 feet and stuck drill stem. The test then was being plugged back for a first test around 9000 feet.

On the Garwood structure in Colorado County, W. R. Davis, Inc.'s Brownson 1-A, Wooley Survey, is still flowing gas and distillate through perforations at 9423-35 feet. Tests are being made in an effort to cut gas/oil ratio. It is making an average of 3 to 3½ barrels of fluid per hour through 3/16-inch choke.

H. R. Cullen and associates have commenced a new production test in the discovery of the Washburn field in LaSalle County. Washburn 1, Survey 67, original producer in the field, now is being tested on pump after plugging back to 5432 feet. It is attempting to secure production from perforations in sand at 5415-30 feet, 1800 feet below the top of the Wilcox zone. The well had been completed several months ago at 4860-67 feet, but made considerable water. A well nearly ¾-mile northwest is being drilled by the same operators.

Henderson Coquat's Beshears 1, Loving Survey, on the Campbellton prospect in Atascosa County, has been abandoned at 5820 feet. It found several minor shows in the Carrizo zone.

Opening New Pool in Starr

Opening of a new pool or a one-mile northwest extension to the Boyle field of Starr County was assured when Dean and Hendrickson's M. M. Garcia flowed several barrels of distillate and a large volume of gas through 5/64-inch choke under 800 and 1200 pounds pressures. Production is from 12 perforations at 2850-55 feet, which would be a new producing level for the area.

The well and the 50-acre drill block was sold on a one-half interest basis to Henshaw Brothers of San Antonio and the operators plan an immediate joint development. Several locations are scheduled for drilling in the sector.

Arkansas Fuel Oil Company's Martinez 1, 1½ miles southeast of the North Rincon field, and in the same county, was coring below 5000 feet. A sand at 4313-19 feet yielded 60 feet of oily mud, 10 percent oil, 180 feet salt water and 3 pounds in 15 minutes. Farther south, and 2 miles north of the Rincon main production, Transwestern Oil Company's Cameron 1, Section 137, drilled to 5527 feet, plugged back and tested salt water through perforations at 4762-4766 feet. New perforations were made at 4545-64 feet and a test was under way.

Test Duval Well on Pump

Giblin and Tesmelis' Holzapfel 1, wildcat in Section 178, northwestern Duval County, was being tested on pump after fluid could not be lowered below 150 feet from the top of the hole. The well, in the Mirando sand, is testing through perforations at 1088-1100 feet. Two other tests are being commenced in the immediate area, hence, the value of the shallow discovery shortly will be known.

Argo Oil & Realty Company's attempt 10 miles northwest of Premont, Duval County, has failed with the abandonment of C. Gonzales 1, Carrera grant. The test had attempted to blow out from sand at 6280-6308 feet. Drill pipe stuck and was cemented in the hole. It was decided not to test the well, but to junk the hole in favor of another test. The well had been drilled to 5300 feet by Henshaw Brothers and S. G. Nelson, then was taken over by the new operator.

Bexar County

A tubing leak developed in Jack Tarver et al's Lamm 1, apparently opening a Midway-Navarro sand field in Bexar County. The test is located in Luna Survey No. 3 and is 2½ miles southeast of Losoya. Hole had been drilled to 1692 feet and plugged back to test a 1200-foot sand. It was making some 28.5-gravity oil.

Texas Gulf Coast

Brazoria County Wildcat Is District's First 1941 Field

J. Newton Rayzor's Christian 1, Wm. Parker Survey, central Brazoria County, provided the first 1941 field discovery in the Upper Texas coastal region. The field, Chenango, is a mile west of the townsite of Chenango. Official potential was 27 barrels per hour of 34-gravity oil, showing 20 percent salt water, via ¼-inch choke from perforations at 8565-72 feet. Tubing and casing pressures were 865 and 1200 pounds, respectively. No recompletion will be made unless salt-water flow increases considerably. On a test lower in the sand section, the wildcat made 28-30 barrels hourly, but showed an increasing salt-water cut and was killed. The test was drilled tight, one report placing Large Discorbis at 6993 feet, Heterostegina at 7330 feet and Frio at 8152 feet. An upper sand which showed oil was not tested. The prospect was found in 1935 by Atlatl Oil Company with reflection seismograph, and reshot by Gulf Oil Corporation in 1938. The discovery, first test for the prospect, was drilled on Sun Oil Company farmout acreage. Locations or acreage deals are under consideration by Sun Oil Company, The Ohio Oil Company, Gulf Oil Corporation and Stanolind Oil & Gas Company.

Strake Petroleum Corporation was trying to drill out of cement in Griffith 1, promising wildcat three miles southwest of the Alta Loma field, in the Cayce Survey, Brazoria County, being delayed by change of bits. The casing, 7-inch, was landed at 10,325 feet and 380 sacks were used for the cementing, with only 10 sacks leaving the casing. This test attempted to blow out from Frio at 10,288 feet, showing a rainbow of oil on the pits. Operator will core deeper after getting out of cement.

Phillips Petroleum Company will probably open a new sand at League City, Galveston County, as the result of tests being made in Herrick-Martin 1, north outpost. The well found salt water in all regular Frio sands, but logged new sands at 10,815-915, 10,625-10,655 and 10,710-740 feet. Test of the first sand recovered gas and distillate. Perforations were squeezed for test at 10,625-655 feet.

Two Wilcox wildcats showed moderately encouraging. Superior Oil Company's McWhorter 1, T. J. Nichols Survey, 7 miles east of Magnolia, Montgomery County, was perforated at 8825-8835 and 8855-77 feet, and flowed 90 percent salt water, 10 percent oil, with 1,000,000 feet of gas daily through ¼-inch choke, with tubing pressure 1450 pounds, casing pressure 2175 pounds. The wildcat was killed to test the sets separately, the lower perforations making salt water with 1,500,000 feet of gas daily, with small amount of oil. On test of the upper section, packer failed and 56 stands of tubing fell into the hole.

Irwin & Muench's Schoenfeld 1, R. O. Lusk Survey, Plantersville area, Grimes County, probably can be made a producer if porous section can be found in the Wilcox. Operators were drilling and coring ahead, preparing to run casing to 7950 feet. At 7850-60 feet, the first soft sand in the Wilcox was found, showing gas and distillate. Wilcox was topped at 7663 feet, Hockleyensis at 3673 feet, and Cook Mountain at 6050 feet.

First location in a year for the Buckeye field, Matagorda County, was staked by United North and South Development Company, which located Stoddard 2 in the J. C. Keller League, 2750 feet northwest of Stoddard 1, the discovery.

Humble Oil & Refining Company located Hubbard 5, northwest offset to Rowan & Nichols and Texas Gulf Production Company's Bradbury 1, only 8900-foot producer in the Rowan field, Brazoria County. The former company continued to give much attention to this horizon in Hubbard 3, north outpost, drilling out cement and perforating low in the section after test at 8940-50 feet recovered gas and distillate. Upper perforations were squeezed. This well has made a most thorough test of all sands encountered in the field, testing the 8500- and 8900-foot regular sands repeatedly, as well as new sands between 8900 and 9400 feet. Potential for Rowan & Nichols and Texas Gulf Producing Company's Bradbury 1, just taken as the well has been furnishing gas for drilling, was 152 barrels of 55-gravity distillate daily through ¼-inch choke, tubing and casing pressures about 3000 pounds, with top of sand at 8950 feet.

Dyersdale, Harris County shallow

Coming to Buffalo?
. . . You'll Like This Friendly Hotel

What do you demand in a good hotel? Do you like a cordial welcome, well-appointed, homelike rooms, comfortable beds, good food at reasonable prices, a safe place for your car?

Must **your** hotel be conveniently located to business, stores, theatres?

If those are the things you demand in a good hotel, you'll like Hotel Lafayette.

MODERATE RATES

Single . . . . . $2.50 up
Double . . . . . 4.00 up

Special rates for 4 or more

Write for Folder H-10

K. A. KELLY MANAGER

Hotel LAFAYETTE
BUFFALO, N.Y.

EXTRA!

GET YOUR COPY OF
"ROPE DOPE"
WITHOUT CHARGE

Send us your name, title, name of company and address. We'll mail you each issue of this informative periodical (not advertising). "Rope Dope" keeps you up with the times in the wire rope field. There is no obligation on your part. D

UNION WIRE ROPE CORPORATION
2104 Manchester Ave. Kansas City, Mo.
Tulsa • Houston • Chicago • Salt Lake City
New Orleans • Monahans • Portland • Ashland, Ky.

UNION Wire Ropes
The "ULTIMATE LOW COST WIRE ROPE"

Frio field, was extended a location northwest as Tilson Construction Company completed Haas-Thompson 1 for 93 barrels daily through 9/64-inch choke, from sand topped normal at 4060 feet.

Sun Oil Company extended the Caplen field, Bolivar Peninsula, Galveston County, east by completing State 1-27, directional hole under the Gulf, for 357 barrels of 32-gravity oil daily through 3/16-inch choke, tubing and casing pressures 875 and 500 pounds, from 6060 feet. Harrison & Abercrombie and The Texas Company each completed a well on the southeast side of Old Ocean, Brazoria County, to remove two rigs from the active list of 15. The Texas Company's well, Walker 1, was its first completion in the field.

Kadane Field Rules

Twenty-acre spacing and 20-acre proration units were ordered by the Texas Railroad Commission for the Kadane field, Archer County. Wells are to be located 330 feet from lease lines, and at least 770 feet apart. Allowable is to be distributed on acreage and per-well, with 75 percent on the acreage basis.

Rules call for 100 feet of surface casing cemented to the surface, and an oil string set with 150 sacks of cement.

Every oil man in Louisiana should own a copy of . . .

C. D. LOCKWOOD'S
REFERENCE REPORT,
SOUTHERN LOUISIANA

It contains a FULL-PAGE lithographed map of **EVERY OIL FIELD** and salt dome in the south part of the state, and a **FULL PAGE OF DATA** opposite each map.

Size 8½ by 11", **344 pages.** Plastic bound.

C. D. LOCKWOOD'S OIL REPORT
314 Second Natl. Bldg., Houston, Texas

Louisiana Gulf Coast

Three New Sands Opened, Divided Among Two Fields

Three new sand discoveries led the Coastal Louisiana news. Union Oil Company of California opened two new pay horizons in the East White Lake (Schooner Bayou) field, Vermilion Parish. The company's Vermilion Parish School Board 1-B, 800 feet east of the discovery, in Section 16-15s-1e, flowed 405 barrels of 37-gravity oil daily through 3/16-inch choke, with tubing pressure 1150 pounds, casing sealed, from 33 perforations at 9863-90 feet. There was no water. Previously the test flowed gas with trace of distillate from the discovery sand at 10,512-520 feet, and was plugged back to completion depth. The company's Louisiana Land & Fur Company 1, 7000-foot northeast extension, Section 15-15s-1e, flowed 211 barrels of 34-gravity oil daily via 5/32-inch choke, with tubing and casing pressures 1400 and 2400 pounds, from 39 perforations at 7342-55 feet. This sand was disclosed two weeks ago when a test 18 feet lower in the section obtained a 300-barrel daily flow, but with high salt-water cut. The new completions here are the second and third, with each well producing from a different sand. The three tests are the only ones the company has drilled in Louisiana. It took over the discovery in June, 1940, at 8500 feet from Louisiana Land & Exploration Company in a deal involving $400,000 in cash and oil payments, and drilled to discovery sand at 10,536 feet. The structure was found in 1929 by refraction seismograph by Louisiana Land & Exploration Company, which drilled two failures.

Humble Oil & Refining Company opened a third pay, deepest for the Potash field, Plaquemines Parish, Mississippi delta region. Orleans Levee Board 48 gauged seven barrels of 28-gravity oil hourly via ⅛-inch choke, tubing pressure 1300 pounds, casing sealed, from perforations at 8550-85 feet, to make the third new sand strike of the week and the ninth for the sector in 1941.

The St. Gabriel area, Iberville Parish, is regarded as South Louisiana's next new producing area since Titanic Oil Company, which a week ago opened the Westwego field in Jefferson Parish, cored gas distillate sand at 6875-98 feet and oil sand at 7752-7800 feet in Natalbany Lumber Company 1, Section 7-9s-2e, near the Mississippi River. Casing was run to bottom near 8500 feet, and operator will drill deeper, possibly to 10,000-foot contract depth, before testing. Immediate objective is the 9050-foot sand found in Shell Oil Company's Natalbany Lumber Company 1, dry hole ¾ mile southeast. This sand is expected at about 8800 feet in the current test, as it is checking 200 feet high. Titanic Oil Company acreage here is a 1700-acre farmout from Shell Oil Company, which discovered the prospect in 1936 with reflection seismograph and drilled two failures, each of which attempted blowout from 9000-9200 feet and were credited with strong production possibilities. The original shooting picture was said to show 400 feet of closure, with the only element retarding development being a stiff drilling obligation upon which the feeholder insisted.

Another South Louisiana prospect regarded as a field opener, the Lowry, or Lakeside structure, in Cameron Parish, northwest of Grand Lake, had not been tested, as Lisbon-Iberia Oil Company's Calcasieu National Bank 1-A, Section 19-12s-4w, had a gas blow near bottom at 10,700 feet that stuck drill pipe. Operators were attempting to release. Two weeks ago, the well made 210 barrels of 53-gravity distillate in 76 hours, via various chokes, with pressures varying from 2500 to 3100 pounds, from 10,050-060 feet. The test also logged six other gas or distillate sands which have not been tested, operators electing to drill to 11,000 feet before testing again. Superior Oil Company is the major close-in leaseholder by virtue of a $50,000 purchase of 1500 acres from Lisbon-Iberia Oil Company.

The State Conservation Commission issued a permit authorizing Stanolind Oil & Gas Company to unitize separate lease and royalty interests in the South Jennings field so the company may proceed with plans for a $500,000 recycling plant with approximate daily capacity of 30,000,000 cubic feet. Gas wil be recycled only from the 8600-foot horizon, with production from other levels not affected by the plans. The field has three wells which have been virtually shut-in for the past two years. Plant construction plans are expected to call for a development program, the extent of which has not been revealed.

W. R. Davis & Company tested Voorhies 1, deep test at Anse La Butte, St. Martin Parish, at 7852-61 feet, recovering 300 feet of gas-cut mud under 600 pounds pressure, with drill-stem tester, ¼-inch top and bottom chokes, on one hour test. Perforations were squeezed

Do you know that DEDMAN specializes in

CLEAN SOUND ELECTRIC STEEL CASTINGS

. . . that save Machining Losses and win and hold Customers for leading Manufacturers?

DEDMAN
FOUNDRY & MACHINE CO.
HOUSTON, TEXAS

"You need quality Castings . . . quality demands DEDMAN Castings"

for next test at 7850-60 feet. Stanolind Oil & Gas Company's Castille 1, deep test on the southeast flank, was drilling at 7200 feet.

Work on extension attempts for the new sands on the south flank at Gueydan, Vermilion Parish, progressed rapidly. Union Sulphur Company spudded Baker 1, Section 3-12s-1w, 660 feet southeast of the recent 9700-foot discovery, with portable rig to meet time limit, and shutdown to install heavy equipment. Fohs Oil Company, whose Mulvey Nos. 1 and 2 opened 9200- and 9700-foot sands 4000 feet south of production, was ready to spud Mulvey 3, 700 feet northeast of No. 2. More locations are expected in the next week.

To Confirm Oil Show

Superior Oil Company of California was changing drill pipe at St. Martin Land Company 1-B, Section 20-9s-7e, confirmation test for the Section 28 (Hager-Martin) Dome in St. Martin Parish. Sands, logged at 9340 and 9475 feet, are expected to produce oil or distillate. Casing was set at 9500 feet. The discovery, Stuart 1, one location away, was completed as a gas well at 9330 feet. The dome has resisted attempts to establish oil production longer than any known salt-core structure in South Louisiana, being proven for domal material in 1917. The company ran 7-inch protection casing to 5525 feet in Rycade 6, southeast flank test at Bayou Bouillion, and will drill deeper.

Union Sulphur Company extended Woodlawn production, Jefferson Davis Parish, ½ mile east by completion of Trimbel 2 for 250 barrels daily through 9/64-inch choke, from 8048-56 feet. Stanolind Oil & Gas Company demonstrated that exploitation of the 8200-foot level at Iowa, Calcasieu and Jefferson Davis parishes, outstanding new sand find of 1940, was not over by completing Willett 1, Section 7-9s-6w, on the Jefferson Davis Parish side, for 480 barrels daily through 3/16-inch choke from 8222-58 feet. Sixty feet of sand was logged.

North Louisiana

New Starts Include Two Wilcox Tests on Olla Trend

The Olla trend just south of the Angelina Caldwell Flexure, which for several months has been exceedingly active in geophysical exploration and leasing, received two new wildcat locations last week, both of which will seek production from the Wilcox.

In Catahoula Parish, H. L. Hunt, who has led the wildcat campaign in this area following his discovery of production at both Olla and Nebo (Jena), LaSalle Parish, made location for Anderson 1, SE SE 31-10n-6e, Catahoula Parish. In LaSalle Parish, Louark Producing Company, which has taken large blocks in this area, spudded Louisiana Delta Hardwood Lumber Company 1, C SW SE Section 27-6n-4e, LaSalle Parish.

W. G. Ray Drilling Company abandoned a deep test in the shallow Pine Island field, Caddo Parish, Noel Estate 1, SE SE 30-21n-14w, at 8510 feet. It logged top of lower Marine at 6410 feet.

Drilling at Olla has shown a considerable decline in recent weeks, only one new producer having been completed there last week. H. L. Hunt worked over two wells, successfully sqeezing off water in one and recompleting a gas well as an oil producer.

Skelly Oil Company et al's Volentine 1, NW NW 31-20n-6w, Claiborne Parish, completed late in 1940 as a gas/distillate well, has been reworked and tested at several levels in both Glen Rose and Travis Peak, and was completed again last week as a 2,000,000-foot gas well. Total depth is 6507 feet. With elevation of 404 feet, this test logged massive anhydrite at 4560-4798 feet, and topped Travis Peak at 5985 feet.

Louisiana Permits

Twenty-eight drilling permits were issued last week by the Louisiana Department of Minerals, of which seven were in North Louisiana divided between the following parishes: Caddo 4, and LaSalle 3. The twenty-one in South Louisiana were in the following parishes: Acadia 1, Calcasieu 1, Cameron 1, East Baton Rouge 1, Evangeline 3, Iberia 1, Lafourche 1, Plaquemines 6, Rapides 1, St. Martin 3, and Vermilion 2.

Arkansas Permits

One drilling permit was issued last week by the Arkansas Oil & Gas Commission: Union County—Bob Milam's G. J. Childs 3, SW SE NW 8-16-16.

Arkansas

New Operator Enters McKamie Gas/Distillate Field

Louark Producing Company made its first location in the McKamie field, LaFayette County, R. Cornelius 1, C SE 30-17-23. It is the state's deepest field, producing gas/distillate from the Smackover lime at 9200 feet. The field has three producing wells and three tests drilling, deepest of the trio being 7750 feet.

McKamie, after a hearing last week by the Arkansas Oil & Gas Commission, was officially designated a gas field, and a 160-acre spacing rule was ordered. It was opened in 1940 by Atlantic Refining Company as a geophysical prospect. The commission also ordered an immediate investigation of the feasibility of a recycling program, and also authorized experiments with gas for possible use in production of acid and dry ice.

The ninth producer for the Dorcheat field, Columbia Company, was completed at McAlester Fuel Company's K. J. Sayers 2, SW SE 10-18-22, northeast edge well which flowed 200 barrels of 45-gravity oil daily through 10/64-inch choke. Total depth is 8915 feet. The only other test active in Dorcheat, Shell Oil Company's W. P. Keith 2, SW SE 9-18-22, was shutdown at 8823 feet due to high water.

After an all-day hearing February 4,

Speaking of Jericho and Door Knobs

If there is anything to the assertion that perspiration tarnishes door knobs, yours is past redemption by even the most industrious and experienced polisher-upper. All lathered up with desire to be of service to any good man who drills or produces oil wells, we've tried your door once a week since the Oil Weekly was an infant prodigy. And we hope you feel kindly about our siege, for the boys who felled the walls of Jericho were pikers. We've hardly started.

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

PELCO

Houston
Berwick
Houma
New Iberia
Magnolia

the Arkansas Oil and Gas Commission authorized a gas repressuring project for the Jones sand (Lower Marine) horizon of the Schuler field, Union County, Arkansas.

It is estimated that the repressuring project will increase ultimate recovery from this horizon of 8,000,000 to 12,000,000 barrels of oil. Testimony of engineers to this effect was given at the hearing.

The work of installing repressuring equipment will be started February 15. It is Arkansas' first repressuring project. Under the repressuring project the field will be operated as a unit. No change was made in the February oil allowable for the Jones sand at Schuler, which is 13,500 barrels.

The reservoir pressure in this pool has been declining sharply in recent months. Between last September 4 and last November 13 the pressure dropped from 1828 pounds to 1701 pounds, a total of 127 pounds, or 1.84 pounds per day. On June 4 the pressure was 2014 pounds. The field has 146 wells producing from the Jones sand.

Gas from village and Magnolia fields is to be used in the project.

Southeastern States

Report Oil and Gas Showings In Two Shallow Alabama Holes

Showings of oil and gas were reported last week in two tests in Alabama, both at shallow levels.

In Fayette County, where several wells drilled 30 years ago showed gas, B. L. Fillingame and Atlas Oil & Refining Company's Harbin 1, NW SW 3-16s-12w, encountered a strong showing of gas at 1553 feet, but after casing was set and bailing completed the gas disappeared. The valve is closed for a build-up of pressure.

In Madison County, Alabama, W. W. Newman, Trustee's W. P. Nichols 3, SW SE 35-6s-2e, drilled to 289 feet and set casing but in attempting to raise it it broke off, leaving two sections in the hole. They were able to drill out this casing so that one foot of oil-bearing sand was exposed at 245 feet and a pumping unit and tank may be installed.

One new location was made in Alabama last week, G. T. Shaw's Johnson & Thompson 1, C NW NE 15-2s-4w, spudded and drilled below 365 feet.

Four completions were reported last week in Mississippi of which three were oil producers in the Tinsley Dome field, Yazoo County. The other was a wildcat failure in Sharkey County. Another deepening operation in Issaquena County was also abandoned. Two new locations were announced at Tinsley Dome.

Tatum, Dunbar & Shaddock have completed assembly of a wildcat block in Jones County for Tide Water Associated Oil Company, the acreage being in township 8 north, range 13 west, just north of a block held under lease by Gulf Refining Company, also in Jones County.

Hassie Hunt has closed negotiations with W. O. Allen of Tulsa to test the Wilcox sand in the latter's abandoned wildcat, Culley 1, Section 6-14n-3e, Warren County, which quit last April at 4990 feet in salt. Wilcox sand was logged at 2890 feet.

California

First Discovery of Year Opens New Los Angeles Area

First oil field discovery in California for 1941 has been chalked up by Western Gulf Oil Company with completion of Lechler 1 in the Castaic area of Los Angeles County, four miles northwest of the Del Valle field discovered late last year by R. E. Havenstrite. On the pump the discovery produced at an initial rate of about 100 barrels daily, 22-gravity oil from 2450 feet. The company has acquired leases on all property within a mile of the well and holds something over 1800 acres in the district. It is expected that after the discovery has been tested more completely the company will start a second test which will be taken down for examination of deeper zones.

Continental Oil Company has taken over, under an operating agreement, about 1760 acres of prospective oil lands in the Grapevine area of Kern County, including some acreage already partially tested by Reserve Oil & Gas Company and others within the past several years. This territory has been extensively prospected by Ohio Oil Company and several other units, including Richfield Oil Corporation which has failed to make producers out of two deep tests put down in the Wheeler Ridge area to the northeast. Richfield Oil Corporation originally planned 10 tests for its holdings in an area which embraces some 50,000 acres.

The test to be drilled by Continental Oil Company, scheduled to start before April 1, is to be located over a mile southeast of Kern Line Oil Company's No. 1 wildcat in Section 19-11-19, now drilling. A formation test run on this well this week, for examination of interval 8190 to bottom at 8290 feet, resulted in slight blow in three minutes after valve was opened. Extent of recovery in drill pipe was not made known.

Continental Oil Company is also planning a test to start before mid-year on the 2000-acre Mabury ranch northwest of the Belridge field and between the Shale Hills sector and Blackwell's Corner in Kern County.

On its 2400-acre lease embracing the Los Angeles County Prison Farm in the Newhall area of Los Angeles County, Barnsdall Oil Company is erecting derrick for a test in Section 5-4-16. Closed last week, this lease was actively sought by several companies, Barnsdall Oil Company's bid being judged the better by county authorities. The company now has 3975 acres in this area, having leased 1575 acres from the Newhall Land & Farming Company recently.

Within recent weeks a heated land play has developed in the neighborhood of the Trico gas field in Tulare and Kings counties in the San Joaquin Valley. Eleven companies have accumulated sizeable blocks of acreage in the district, some of which was acquired on a bonus basis. Field reports unconfirmed by the company state that The Texas Company has concluded a lease on 500 acres owned by H. A. Heath in Sections 13, 18-24-23, Tulare County, for a cash bonus of $50 an acre and 10 percent royalty. This property lies northwest of proven gas territory. Tide Water Associated Oil Company is also reported to have re-entered this territory, despite the fact that it was unsuccessful in a wildcat last year in this district which was taken to 11,782 feet. Its new holdings are understood to lie to the northwest of its deep test location in Section 22-24-23.

Hancock Oil Company is making an extensive pumping test of Roberts 1, wildcat in Section 6-30-28, Union Avenue area, Kern County, which is rated with potential of about 105 barrels daily rate, 15.3-gravity oil from perforated interval between 5316 and 5277 feet. Decision on whether to do further drilling in the project before calling the well a completed producer is being deferred pending outcome of pumping tests. Location is about midway between the Mountain View and Fruitvale fields in the immediate vicinity of Bakersfield. Petroleum Management Company with leases in the same section reportedly has no immediate drilling plans.

Michigan

Test of Roscommon County's First Discovery Is Delayed

Plugged back from a water horizon at 3778 feet to 3770 feet, Pure Oil Company's Swindlehurst 1, C E NE NW, Section 32-20n-6w, Clare County, completed for 124 barrels of oil after acid from Monroe dolomite. It is a quarter mile south of Wyman 1 discovery and third producer for the area.

Trouble encountered in reaming hole for a string of 5-inch casing had delayed a production test on Eugene Hilliard's State 1, Section 19-21n-3w, first wildcat in Roscommon County to show free oil. A pay was drilled at 4045-47 feet in Dundee lime.

Sun Oil Company continued to go deeper at McIntosh 1, Section 16-19n-3w, Clare County Wildcat, which was drilling at 5146 feet on February 3 with about 4200 feet of water in the 5-inch hole. Objective of the test is the Sylvania sand, originally charted to be picked up just below 5100 feet. With the exception of Gulf Refining Company's deep well in Bay County, Sun Oil Company's test is the deepest drilled in the basin area since 1938.

Comparatively little progress has been made up to this week in attempts to clean up the hole on Gulf Refining Company's Bateson 1, Section 2-14n-4e, Bay County, record depth well in Michigan at 7776 feet. About 3125 feet of the 4½-inch drill pipe has been recovered but rig was shut down again for orders first of week. Sections of drill pipe recovered have shown numerous fractures in the collars and a severe crystallization of the pipe. The 3125 feet was fished out in several different sections.

Robert W. Atha, Mt. Pleasant, established a new record, as rotary contractor on Union Drilling & Producing Company's Consumers 1 wildcat, Section 16-20n-5w, Clare County. After setting 65 feet of 10-inch surface pipe, hole was drilled and cased with 6-inch to 1589 feet in 4 days.

UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Dorcheat)—		
McAlester Fuel Co., Sayers 2, 10-18-22	200	8915

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (E. Coalinga Eocene)—		
Robert S. Lytle, No. 75-18F	2600	8143
Kern County (Coles Levee)—		
Richfield, KCL-A 76-32	1350	9200
Union, Kernco 58-2	600	9925
Kern County (Greeley)—		
Standard, KCL 11-26	1245	11,510
Wilshire Oil Co., Campen 1	3500	11,510
Kern County (Rio Bravo)—		
General Petroleum, Caldwell 5	1046	11,500
Superior, Pasadena Realty 2	1525	11,470
Union, P. S. 41-33 (PD 11,502 ft)	1174	11,507
Kern County (Ten Sections)—		
Shell, KCL B-52-31	1714	8220
Kern County (Union Avenue)—		
Hancock Oil Co., Roberts 1 (PD 5340 ft)	98	5477
Kern County (Wheeler Ridge)—		
Richfield, KCL 2	*	11,681
Los Angeles County (Dominguez)—		
R. E. Havenstrite, No. 6	1010	7215
Los Angeles County (Wilmington)—		
A. D. Mitchell, Combate 2	100	3715
Union Pacific, UP 168	284	5477
Ventura County (Rincon)—		
CCMO Co., Hobson B-42	269	4200
Yolo County (Rumsey Hills)—		
Standard, Tippetts 2-1	*	3240
OLD WELLS DEEPENED		
Ventura County (Ventura Avenue)—		
Tide Water, Lloyd 116 (OTD 8940 ft)	319	9306

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Clark County—		
H. R. Hull, Briscow 2, nw ne sw sw 32-12n-14w	*	480
Wisconsin-Ill. Oil Co., Cunningham 1, sw c sw 34-12n-14w	*	358
Clinton County—		
A. R. Venuto, Taylor 1, ne ne se 15-1n-1w	*	1531
Fayette County—		
Magnolia, Clow 38, nwc sw ne 5-7n-3e	333	1531
Carter, Owens 8, se se sw 8-7n-3e (pb 1548)	78	1582
Miller 2, nw sw ne 1-8n-3e	36	1523
Lancaster 1, sw nw ne 10-8n-3e (pb 1539)	78	1600
Rhodes 1, nw sw nw 26-8n-3e	28	1588
Sloan 1, sw se ne 35-9n-3e	102	1542
Franklin County—		
H. H. Wagener, Coal Co. 1, swc ne sw 19-6s-3e	*	2289
Gallatin County—		
Cameron Bros., Robinson 2, se nw nw 4-8s-8e (pb 1721)	20	1727
Carter, Kuder 1, sw sw se 33-7s-8e (pb 1718)	239	1754
Kuder 2, nw nw ne 4-8s-8e	381	1700
Hamilton County—		
Carter, Friel 3, se sw se 27-5s-6e (pb 2961)	38	3068
Gulf, Austin 3, nw sw nw ne 34-5s-6e	132	3120
Austin 4, ne nw ne 34-5s-6e	40	2974
Kingwood & Exchange, Weir 1, nw ne ne 35-5s-6e	*	3315
Texas, Carey 1, se se nw 3-6s-6e	90	3084
Carey-Hood Community 1, ne se nw 3-6s-6e	158	3074
Hood 4, se nw ne 3-6s-6e	246	3054
Hood 5, c ne ne nw 3-6s-6e	400	3047
Jackson County—		
Magnolia, Smith Hrs. 1, se se ne 9-8s-3w	*	3893
Jasper County—		
Pure, Hall 2, c e½ nw sw 17-5n-10e	1124	2825
Jefferson County—		
Vater, Modglin 1, nw se sw 9-1s-1e	*	2334
Poorman & Nation, Loyd 1, nw ne nw 19-2s-8e	*	3490
Jersey County—		
L. A. Plumb, Snider 1, c nw sw 27-6n-12w	*	600
Lawrence County—		
Harland Kays et al, Griggs 1, sw sw se 12-3n-13w	*	350
Marion County—		
Obering & Phillips, Thompson 1, nw nw nw 35-4n-1e	84	1363
Abshur & Booth, Hoffman 1, c nw nw 31-4n-3e	*	2251
Richland County—		
Pure, Cazel 5, ne nw nw 25-4n-9e	38	2582
Rose 2, c n½ ne sw 7-4n-10e	82	2995
Shelby County—		
Guild et al, Hunter 1, ne se ne 7-10n-3e	*	1741
Wabash County—		
Hayes & Yingling, Fischer 1, sw nw nw 18-1s-13w	*	2890
Wayne County—		
Pure, Johnson 1, w½ sw sw 9-1n-8e	*	3040
Garrison 3, e½ ne se 35-2n-7e	97	3090
Johnson Bros., Poorman 1, se ne nw se 19-3s-8e	212	3254
W. W. Gray, Fee 2, sw nw ne 31-3s-8e	13	3271
Nation Oil, Dauby 1, c n½ sw ne 31-3s-8e	184	3249
White County—		
Exchange & Ohio, Holderby 3, ne ne ne 11-6s-9e	21	2283
Skelly, Wilson 2, ne sw ne 11-6s-9e	195	2282
Daly, Trs. 4, se ne sw 17-4s-14w	35	2594
Crossville 1, c nw nw ne 20-4s-14w (pb 2608)	21	2744
F. H. Rhodes, Golden 1, sw se ne 29-5s-14w	112	2282
Tide Water, Dannis 13, ne nw ne 33-4s-14w (pb 2735)	172	2917
Dennis 14, sw nw ne 33-4s-14w	140	2956
Dennis 15, nw nw ne 33-4s-14w	262	2730
O'Meara Bros., Hon 1, se ne ne ne 30-4s-14w	*	3237
Yingling, Ford 1, se ne sw 22-4s-14w	38	2620
Superior, Fitton 1, sw c se se 28-4s-14w	376	2730
Fitton 6, sw sw ne 27-4s-14w (pb 2615)	85	2977
Collins 2, se se se 22-4s-14w	233	2930
Walter Duncan, Hughes 7, ne se se 17-4s-14w	150	2720
Hughes 4, nw se se 17-4s-14w	125	2720
Delta Dr. Co., Boultinghouse 3, nw sw nw 16-4s-14w	250	2858
Bell Bros., Skiles 3, ne nw sw 16-4s-14w	110	2866
Herndon Dr. Co., Bond 5, sw se se 5-4s-14w	113	2824
OLD WELLS DEEPENED		
Stelle et al, L. & N. RR. 2, se ne 34-5s-6e (otd 2973)	504	3064
SALT WATER DISPOSAL WELL		
Zephyr et al, Smith 1, se ne sw sw 31-6n-3e	...	1192

Indiana

Company, Well and Location	Init. Prod. Bbls.	Depth
Greene County—		
Commonwealth Oil Co., Tucker 1, ne nw se ne 16-6n-6w	*	1790
Pike County—		
F. J. Ellison, Coldemeyer 1, nw sw sw ne 11-3s-7w	*	1404
Posey County—		
W. C. McBride, Swonders 10, se ne nw ne 4-4s-14w	184	2618
Carter Oil, Highman 1, sw se sw 31-6s-13w	*	3039

*Failures; †Junked; ‡Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended February 8, 1941

	WELLS COMPLETED								PERMITS FOR NEW WELLS*				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	Initial Production	‡Miscellaneous	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Arizona	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Arkansas	1	1	....	....	200	....	16	25	1	3	16	10	153
California	17	15	....	2	16,834	....	125	132	19	48	101	133	1,102
Colorado	.....	....	....	....	.....	....	....	2	....	.....	....	.....	.....
Florida	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Georgia	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Illinois	58	41	....	15	7,178	2	332	433	58	100	441	517	4,532
Indiana	4	1	....	3	184	....	53	55	....	.....	....	.....	.....
Kansas	38	23	2	12	29,884	1	215	186	37	62	207	175	2,048
Kentucky	7	1	....	6	8	....	34	36	....	.....	....	.....	.....
Louisiana	32	22	2	8	4,024	....	161	207	28	73	171	127	1,658
Michigan	17	8	1	8	348	....	83	171	16	31	93	180	1,093
Mississippi	4	3	....	1	1,020	....	17	20	....	.....	....	.....	.....
Missouri*	.....	....	....	....	.....	....	....	1	....	.....	....	.....	26
Montana	.....	....	....	....	.....	....	20	19	....	.....	....	.....	.....
Nebraska*	.....	....	....	....	.....	....	15	.....	2	5	8	.....	69
New Mexico	8	5	1	2	754	....	41	101	5	12	37	88	559
New York	12	6	....	....	39	6	67	125	....	.....	....	.....	.....
North Dakota	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Ohio	42	5	21	12	213	4	179	129	....	.....	....	.....	.....
Oklahoma	24	14	2	8	4,778	....	232	261	37	76	206	229	1,888
Pennsylvania	22	12	8	1	36	1	193	497	....	.....	....	.....	.....
South Dakota	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
Tennessee	.....	....	....	....	.....	....	....	5	....	.....	....	.....	.....
Texas	199	134	7	57	94,977	1	945	1,278	179	446	793	1,478	11,170
Utah	.....	....	....	....	.....	....	....	.....	....	.....	....	.....	.....
West Virginia	18	1	11	6	27	....	93	94	....	.....	....	56	603†
Wyoming	.....	....	....	....	.....	....	11	23	....	.....	....	.....	1
Total this week	503	292	55	141	160,504	15	2,832	3,800	382	856	2,073	2,993	24,902
Total last week	488	301	58	110	153,705	19	2,329	3,316	474	474	1,691	2,605	24,902
Total this year	2,832	1,773	284	684	903,558	91	....	.....	....	.....	....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
† For first 9 months of 1940 only. ‡ Includes old wells deepened, water-intake, gas input and salt water disposal wells.

United States Well Completions—*Continued*

Kansas

Barton County—
Martin et al, Feltes 2, se nw se 8-16-12w 3000 2904
Central Petroleum, Hogan 1, c n½ ne se 34-16-13w ..... * 3410
Magnolia, Riemann 1, c s½ se se 4-17-11w 3000 3297
British American et al, Linder 1, nec sw 24-17-14w ..... * 3507
Hannum Dr. Co. et al, Skolaut 1, nwc ne 27-18-15w ..... ¶23.0 3500
Stanolind, Musenberg "B" 1, c e½ se se 1-19-11w 64 3377
Champlin, Clawson 4, c n½ ne nw 17-20-11w 31 3330
Magnolia, Roetzel 20, sec 24-20-11w. 1437 3255
Butler County—
Connell, Tatum 1, ne sw nw 9-27-6e 30 3158
Cromwell & Lewis; Schreiver 2, nwc sw 34-27-6e 35 3090
Cowley County—
McKnab, Roberts 1, nec sw 13-30-5e ..... * 2896
Ellis County—
Dickey, Henderson "B" 5, c n½ se sw 6-11-17w 1505 3467
Cities Service, Collahan "C" 1, sw nw se 24-11-17w 3000 3472
Deep Rock, Baumer 30, c w½ nw se 27-11-17w 3000 3549
Gulf, Brungardt 1, c n½ nw ne 31-13-16w 1259 3492
Bay, Keys 3, c s½ ne sw 1-13-18w * 3772
Ellsworth County—
Hollow Dr. Co., Wilkens 3, c s½ ne sw 18-17-9w 3000 3252
Lauck, Moncrief et al, Kahler 1, c n½ nw sw 23-17-10w ..... * 3335
Harvey County—
Hipple, Howell 2, c n½ sw nw 17-23-3w 306 3367
McPherson County—
Stelbar, Jones 4, c s½ ne nw 19-17-1w 49 2703
Kiowa et al, Vogts 1, c nw sw 8-20-1w ..... * 3012
Pratt County—
Skelly, Goyen "B" 1, se se nw nw 17-28-11w ..... ¶1.2 4293
Reno County—
Cities Service, Crandall 1, nw sw ne 23-23-10w ..... * 3964
Landon, Union Cent. Life 2, c n½ sw sw 7-24-10w 2850 3787
Rice County—
Skelly, Ira 2, c n½ sw nw 27-19-10w 542 3031
Schneider Miller 1, c w½ sw ne 9-20-9w 537 3256
Rush County—
Schermerhorn, Gisick 3, se sw se 25-18-16w 178 3575
Russell County—
Cities Service, Kepka 1, c s½ sw nw 33-14-12w ..... * 3215
Tittle "D" 6, nw se ne 14-15-14w. 39 3349
Shell, Sellens 4, ne nw sw 33-15-13w 3000 3350
Sedgwick County—
Prunty, Lemery 2, c e½ ne se 17-25-1e ..... * 3345
Fuller et al, Stitt 1, c s½ se ne 21-27-1w ..... * 3667
Olson, McCredie 1, c n½ ne ne 15-29-2w ..... * 3576
Stafford County—
Shell, Allen 1, swc ne 29-23-11w... * 3766
Phillips, Tretbar 3, c s½ ne nw 12-24-11w 1969 3766
Stanolind, Ferris "A" 3, c w½ ne se 15-24-11w 1029 3830
OLD WELL DEEPENED
Stafford County—
Alma et al, Mellies 1, c w½ nw se 36-21-12w (otd 3576) (pb 3400).. 12 3660

Kentucky

Daviess County—
Andrew Teller, Baird 1 ..... * 1435
Henderson County—
A. Krause et al, Waite 1 ..... * 2148
Muhlenburg County—
Basin Dr., Nicholls Bros. 1 ..... * 2522
Ohio County—
J. R. Williams, Miller 1 ..... * 1315
W. I. Parks, Lowe 1 ..... * 688
Glenn Chancellor, Christian 1 .... * 356
P. R. Hart et al, Seaton 1 ..... 8 325

South Louisiana

Ascension Parish (Darrow)—
Humble, Community 34-B ..... * 4617
Calcasieu Parish (Sulphur)—
Union Sulphur, Ulrich 5 ..... * 7312
Cameron Parish (Chalkley)—
Shell, Sweet Lake 3 ..... 337 8896
East Baton Rouge Parish (University)—
Sugarfield, Reinken 3 ..... 154 6808
Iberville Parish (Bayou Blue)—
Markley & Crosby, Baiste Cooperage 7 ..... 150 3395
Iberville Parish (Bayou Des Glaise)—
Humble, Wilberts 3-B ..... * 9573
Jefferson Parish (Bayou Perot)—
Texas, State 2 ..... 481 9127
Jefferson Davis Parish (Iowa)—
Stanolind, Willett 1 ..... 480 8303
Lafourche Parish (Golden Meadows)—
Brown-Woods, State 6 ..... 99 5558
Superfine, Cheramie 1 ..... 117 5488
Lafourche Parish (Lafourche Crossing)—
Mikton, Martinez 5 ..... 63 10,894
Lafourche Parish (Valentine)—
Mabro, Dousoon 1 ..... 53 8065
Plaquemines Parish (Quarentine Bay)—
Gulf, State QQ 21 ..... 504 8559
Rapides Parish (Cheneyville)—
Amerada, Weil 18 ..... 146 5716
St. Martin Parish (Anse La Butte)—
Glassell & Glassell Judice 1 ..... * 4385
Stanolind, Bergeron 2 ..... 200 4775
St. Martin Parish (West Lake Verrett)—
Shell, Jeanerette 7 ..... 262 8825
Jefferson Parish (Wildcat)—
Titanic, Marrero Ld. 1, Westwego. 238 10,011

North Louisiana

Caddo Parish (Vivian)—
Mahan & Griffin, Henderson 1, 27-22n-16w 35 2502
Caddo Parish (Pine Island)—
W. G. Ray Dr. Co., Noel Est. 1, 30-21n-14w ..... * 8510
Guy N. Kinney, Crystal Fee 2 24-21n-16 ..... 20 1008
McClenaghan, Kimball & Emery, Handschumacher 1, 18-21n-15w.. 50 1696
Texas Co., Raines 9, 27-21n-15w... 45 1580
Weaver-Perry Oil Corp., Pardue 1, 33-21n-15w 35 1588
G. H. Neighbors, Richardson 1, 36-21n-16w ..... * 1640
Bossier Parish (Bellevue)—
T. G. Shaw, Mehaffey 2, 27-19n-11w ¶1.0 359
Claiborne Parish (Wildcat)—
Skelly et al, Valentine 1, 31-20n-6w. ¶2.0 6507
Claiborne Parish (Sugar Creek)—
Union Prod. Co. et al, Simms 2, 32-20n-5w 140 5832
Grant Parish (Wildcat)—
Bering Oil Co., Goodpine Oil Co. 1, 18-8n-1w ..... * 4664
La Salle Parish (Olla)—
Arkansas Fuel, Kees D-1, 7-10n-3e 70 2410
Sabine Parish (Converse)—
A. R. Chestnut et al, Walden B-1, 27-10n-13w ..... * 1994
Webster Parish (Cotton Valley)—
Hunt Oil Co., Meyer 1, 31-21n-10w. 365 8893

Michigan

Allegan County—
Daily Crude Oil Co., Duryee 1, sw nw nw 24-3n-13w..... * 1840
Union Oil Co., Ritz 1, se ne sw 10-4n-13w ..... * 1640
Miller Bros., Foster 1, ne ne sw, 16-1n-13w ..... * 1346
Cass County—
Tamblyn Dev. Co., Good 1, sw se sw 15-8s-15w ..... * 2312
Clare County—
Pure Oil, State A-1, c n½ sw ne 1-18n-6w ..... * 4038
Swindlehurst 1, c e½ ne nw 32-20n-6w 124 3772
Isabella County—
G. M. Obenauer, Lovell 2, se se nw 14-14n-6w ..... ¶ 2.0 1337
Kent County—
Vorhees Dr. Co., McKay 1, sw nw sw 19-7n-12w..... 125 1914
Mich. Devonian, Conrad 1, se ne sw 33-7n-12w 10 1812
Ottawa County—
Bell-Marks, Inc., Tanis 1, sw sw se 1-6n-13w 19 1885
Fisher-McCall, Inc., Moss 2, nw nw ne 2-6n-13w..... 25 1779
Smith Pet. Co., Visser 3, ne se ne 33-7n-13w 10 1794
Visser 6, nw nw nw 34-7n-13w.. 10 1840
E. B. Strom, Zawadski 4, ne nw nw 34-7n-13w 25 1816
Southwest Dev. Co., Purdy 1, se se se 22-8n-13w..... * 2008
Van Buren County—
Clapsaddle & Harris, Bair 1, nw se ne 9-1s-14w..... * 1271
J. H. Fitchett, Baker 2, c s½ sw se 12-1s-15w..... * 1229

Mississippi

Sharkey County (Wildcat)—
British Amer. Oil Prod. Co., Houston Est. 1, 23-11n-7w..... * 4027
Yazoo County (Tinsley Dome)—
Union Prod. Co. & Texas Co., Childress A-1, 24-10n-3w..... 300 4687
Union Prod. Co., Childress-Guynes 1, 24-10n-3w..... 300 4677
Childress-Jones Unit 1, 24-10n-3w 420 5005

New Mexico

Eddy County—
Barnsdall Oil, Dodd 5-B, c nw ne 11-17s-29e ..... * 2831
Ployhar et al, State-Spurck 1, nw ne se 24-17s-27e..... 200 490
Ployhar-Tallmadge et al, State 1, se ne se 2-17s-29e..... 42 2690
Premier Pet. Corp., Beeson-Maddren 5-B, nw sw se 27-17s-30e..... 124 3257
Eddy County (Wildcat)—
Suppes & Suppes, Rogers 1, se sw ne 10-18s-26e..... * 1134
Lea County (West Eunice)—
Wilson Oil Co., State-Shell 9 se sw nw 7-21s-35e..... 54 3759
Lea County (Lynn)—
Republic Prod. Co., Davis 3, sw ne sw 34-23s-36e..... ¶20.0 3623
Lea County (Maljamar)—
Barney Cockburn et al, Baish 29-B, c sw se 28-17s-32e..... 334 4000

New York

Allegany County—
Dick & Dillie, Bardeen farm, Wirt Forest Oil Co., Ackerman farm, Bolivar 4 1219
N. V. V. Franchot, Reddy farm, Bolivar 9 1454
Shaner Oil Co., O'Connor-Green farm, Genesee 7 1559
Rufus Scott et al, Scott farm, Bolivar 6 1435
Sawnet Oil Co., Merritt farm, Genesee 6 1589
WATER INTAKE WELLS
Allegany County—
Bradley Prod. Corp., Duke farm, Alma 7 1436
Hardy & McBride, Garthwaite farm, Alma 1582
J. P. Herrick No. 2, Howe farm, Bolivar 1340
Bradley Prod. Corp., Fritz-Carrol lot, Bolivar 1436
Bohme Bros., Helmhold farm, Wellsville 1438
Sloan & Zook, McDivitt farm, Bolivar 1525

Ohio

Ashland County—
Alleghany Dev. Co., Harris 2 .... * 756
Athens County—
Cooper et al, Ackley 1 ..... ¶ 0.7 1301
H. Hartley et al, Klingenberg 1.. ¶0.65 1145
Cook et al, Copeland 6 ..... ¶0.03 767
Ohio Fuel Gas, Burns 3 ..... * 1724
Fairfield County—
City Nat. Gas, Hendrickson 1 .... * 2244
Guernsey County—
Ohio Fuel Gas, Hayhurst 1..... * 1420
Holmes County—
Ohio Fuel Gas, Miller 1 ..... * 3399
Knox County—
H. E. Perkins, Mickley 3 ..... ¶1.13 2796
Ohio Fuel Gas, Miller 1..... ¶0.79 2959
Lawrence County—
Star Gas Co., Leffingwell 1 ..... ¶0.12 2717
Licking County—
C. A. Davis et al, Bolen 1 ..... ¶1.76 2605
Everett Co., Fitzgibbon 1 ..... ¶0.83 2393
A. Wiley et al, Gleckler 1 ..... ¶0.59 2640
Ray Walters et al, Nutter 1 ..... ¶ 0.5 2811
James McCloy, Mike 1 ..... ¶0.45 2382
Lorain County—
D. Shaffer, Getridge 2 ..... ¶0.39 2294
Williams Prod. Co., Gest 3 ..... * 300
Medina County—
Marine Trust, Ross 21-A..... 5 432
J. O. Crocker, Fee 1 ..... 1 469
Ohio Fuel Gas, Hatch 1 ..... * 3526
Edson & Son, Anderson 2 ..... * 2720
Meigs County—
Downie et al, Morris 1 ..... ¶0.09 754
Ohio Fuel Gas, Story 1 ..... ¶0.06 1610
C. M. Parker et al, Krider 6 .... ¶0.05 3147
Morgan County—
W. S. Harris, Bowman 1 ..... ¶0.64 939
Muskingum County—
Atha, Tom 1 ..... * 3958
Noble County—
Marion O. & G. Co., Powlton 1 ... ¶0.28 1721
Chaseville O. & G. Co., Craft 2.... ¶0.08 1555
Barnesville Dev. Co., Long 1..... ¶0.03 1424
R. L. Smithberger, Bates 1 ..... * 1569
Skinner Co., Hale 1 ..... * 1131
Perry County—
B. G. Davis et al, Beachman 5 .. 130 3260
Dittoe et al, Beachman 5 ..... 75 3380
Summit County—
Wm. Dempsey, Shumaker 1 ..... ¶1.05 2974
Tuscarawas County—
Nat. Gas Co. of W. Va., Bimeler 1.. ¶0.5 4763

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Washington County—		
Turner et al, Longfellow 2	2	330
Wickens et al, Fee 35	*	1284
WATER INTAKE WELLS		
Medina County—		
Marine Trust, Ross 26-0	...	426
Ross 31-0	...	414
Ross 36-0	...	428
Ross 37-0	...	430

Oklahoma

Carter County—		
Magnolia, Richards 85, ne se sw se 31-3s-3w	40	1229
Creek County—		
Curtis, Toney 2, sw se sw 18-17n-8e	60	2513
Jefferson County—		
Danciger, Sun-Hefner 1, sec 3-4s-4w	*	4255
Kay County—		
Tide Water et al, State 2, csl se nw sw 16-28n-1w	475	3665
Marshall County—		
Pure, Crissman (104) 1, nec 29-5s-7e (pb 5082)	248	5099
Mellen et al, Cope 10, se ne sw ne 1-8s-5e	*	603
Muskogee County—		
Stormfeltz, Moore 1, ne se se 4-14n-17e	*	2478
Okfuskee County—		
Deep Rock, Davis 1, sw se ne 20-11n-9e (pb 3986)	¶58.0 & 60	4192
Droppleman, Dill "C" 7, sw ne se 34-12n-8e	400	3599
Seran, Roberts 1, ne se ne 34-12n-8e	600	3674
Keener O&G Co. et al, Dudgeon 1, ne ne sw se 36-12n-9e (pb 3113)	669	3320
Oklahoma County—		
Jones Associated, Harn 4, nw nw se nw 27-12n-3w	510	6554
Ptak, Lyons 1, ne nw ne sw 34-12n-3w	374	6531
Okmulgee County—		
Walker, Moore 6, sw se sw 1-13n-13e	*	1795
Standard Dr. Co., McIntosh 1, se sec 5-14n-11e	*	2520
Viersen, Beidleman 3, c w½ ne sw 25-15n-13e	55	1702
Osage County—		
Blackwell, 3, ne sw nw 10-28n-11e	30	990
Pawnee County—		
Reynolds, Ackley 4-A, sw se se 14-20n-9e (pb 1237)	15	1241
Wood, Comar 1, se ne nw 22-20n-9e	*	2158
Watchorn, Childs 1, c ne sw 9-22n-3e	*	4240
Pontotoc County—		
Pegg et al, Holman 14, nw nw 34-5n-8e	¶3.0	874
Russell et al, Parks 1, nw sw ne 35-5n-8e	*	2650
Pottawatomie County—		
Smith, Vance 1, sw nw sw 5-7n-4e	1000	3994
Seminole County—		
Sinclair-Prairie, Tewee 4, swc ne 14-7n-6e	302	3166

Pennsylvania

BRADFORD DISTRICT

D. E. Quinlan Estate, Fee	1	....
Messer Oil Corp., Loop	1	....
Bradford Tr. Co.	20	....
Forest Oil Corp.	1	....
Forest Pet. Corp.	2	....
Niagara Oil Corp.	2	....
Ryder Scott Co., Fee	1	....
Lloyd & Hardy, Meehan	3	....
Andrus & McDowell, 326 Bing	1	....
NEW YORK-PENN GAS FIELD		
G. L. Cabot, Inc., Rennels	*	....
BUTLER-ARMSTRONG DISTRICT		
Dr. D. L. McCandless, Frederick	¶	....
MIDDLE DISTRICT		
Gibson Wade Co., J. Brothers	¶	....
Messer Oil Co., Keating	3	....
Titusville Trust Co. & Fleming, Lot 3192	¾	....
SOUTHWEST DISTRICT		
Armstrong County—		
Local Co., Schreckengast 1	¶0.09	3478
Louden Dr. Co., Armstrong Trust 1	¶0.08	3579
Clarion County—		
Squirrel Hill Gas, Fagley 1	¶0.09	2580
Fayette County—		
Wahler Powers, Geneva Supply 1	¶ 3.0	1352
George L. Yaste et al, Flemming 1	¶0.47	1393
Greene County—		
Johnson & Eddy, Hoge 1	¶0.67	3360
WATER INTAKE WELLS		
Bradford District—		
Niagara Oil Corp.	1	....

East Texas

Joiner Area—		
British-American O. P. Co., Stone 15 (66-ac)	3600	3639
P. G. Lake, Inc., Dickerson 10 (55-ac)	240	3601
Roosth & Genecov, Moores 1	†	3590
Kilgore Area—		
Delta Drl. Co., Crim 9 (20.08-ac)	250	3610
S. S. Laird et al, Muckelroy 4 (1.45-ac)	2000	3576
J. F. Merrick Dr. Co., Laird 4 (4-ac)	2000	3579
Refuglo Oil Corp., Hughey 7 (18.72-ac)	2400	3484
T. B. Wrather et al, Hughey 8 (76/100-ac)	480	3597
Longview Area—		
O. C. Bailey & Trimble, Jones 13 (15-ac)	2600	3648
Jones 15 (15-ac)	3000	3670
Hamill & Smith, Inc., Everett 7 (11.3-ac)	3200	3525
Roger Lacy et al, Victory 22 (100-ac)	2000	3694
Victory 25 (100-ac)	2200	3646
McElvain et al, Whittaker 7	2500	3535
B. F. Phillips et al, Corbin 3 (5.08-ac)	3600	3654
Falls County—		
A. H. Bell et al, Trice 3	*	3103
Freestone County (Wortham)—		
McNeil Pet. Co., Chancellor 1	67	2996
Wilson 1	17	3026
Houston County (Grapeland)—		
Geier Bros. Inc-F. B. Jackson, Finch-Guice 1	¶115.0	5953
Grapeland Oil Co., Howard 1	¶115.0	6022
Limestone County (Wildcat)—		
D. Harden & C. S. Amos, Hammond 1	*	5955
Navarro County (Corsicana-Powell)—		
Guy Sitton et al, Cerf 1	*	2155
Rains County (Wildcat)—		
Plains Prod. Co., Foster 1	*	4752

West Texas

Cochran County (Duggan-Slaughter)—		
Magnolia, Mallett 2-H	604	5065
Osage Dr. Co., Smith-Cascade 1	394	5069
Crane County (Church-Fields)—		
Gulf, University-Lassiter 4	302	3140
Crane County (Sand Hills)—		
Gulf, Waddell 16	8263	4533
Waddell 18	5523	4495
Humble, Tubb 49	1892	4410
Crane County (Jordan)—		
Westex Oil Co., University-Shell 1-B	822	3639
Ector County (Wildcat)—		
Phillips Pet. Co., Cowden-Embar 1-A	35	4312
Ector County (Foster)—		
M. B. K. Dr. Co., Foster 5-C	442	4349
Ector County (Goldsmith)—		
Gulf, Goldsmith 332	1095	4239
Goldsmith 333	1100	4242
Goldsmith 334	792	4188
Goldsmith 335	1287	4233
Goldsmith 336	1045	4247
Ector County (North Cowden)—		
Cities Service, Rhodes 12	1806	4190
Stanolind, Midland 7-B	337	4588
T. P. Coal & Oil Co., Holt 7	934	4538
Gaines County (Seminole)—		
Magnolia-Atlantic, H. & J. 16-219	486	5256
Gaines County (Wasson)—		
Continental-Amon Carter, Langdon 6-44	861	5050
Hockley County (Duggan-Slaughter)—		
Tide Water, Lincoln 1	858	5005
Menard County—		
Harry Baldwin et al, Leggett 1	¶2.0	1252
Pecos County (Taylor-Link)—		
Landreth Prod. Corp., University-Humble 1-K	269	1770
Runnels County (Wildcat)—		
A. J. Johnson et al, Fletcher 1	*	515
Tom Green County (Wildcat)—		
Dan Short et al, Davidson 1	*	3620
Ward County—		
Gulf, Estes 142	448	2649
Magnolia, Sealy 4-41	678	2918
Yoakum County (Wasson)—		
Aloco Oil Co., Willard-Texaco 12-B	756	5218
Basin States Oil Co., Fisher-Honolulu 3-B	933	5216
Continental Oil Co., Stevens 6	690	5095
Stevens 5-A	938	5115
Denver Prod. & Ref. Co., Whittenburg 23	1600	5118
Humble, Bennett 14	841	5300
Mabee O&G Co., Kiel 1	867	5265
Oil Development Co., Willard 7-763	309	5255
Willard 10-763	692	5270
Willard 11-763	1335	5270
Sinclair Prairie, Willard 2	881	5293
T. P. Coal & Oil Co., Bennett 30	155	5238
Hall 4	1106	5160

West Central Texas

Brown County—		
J. E. Whitesides et al, Johnson 1	¶0.5	1488
Coleman County—		
Coleman O&G Co., Lloyd 1	¶5.7	2196
Eastland County (Wildcat)—		
C. D. Lane et al, Mason 1	*	1142
McCulloch County (Wildcats)—		
A. K. McCord et al, Eubanks 1	*	323
Nelson 1	*	331
Parker County (Wildcat)—		
W. E. Brown & Gardner Bros., Gilbert 1	*	4832
Shackelford County (Wildcat)—		
R. T. Nail et al, Cook 1	*	1283
Shackelford County—		
W. A. Cox et al, Pool 2	*	419
Daniels & Pardue, Davis 1-B	20	1609
Fortex Oil Co., Newell 3	11	1236
Rhodes & Higher, Davis 19	11	1213

North Texas

Archer County (Hull-Silk)—		
Cox & Hamon, Little-Big 7	936	4419
Pet. Producers Co., Anderson 5-C	984	4428
Archer County (K-M-A)—		
Staley Oil Co., Mangold 19	936	3845
Archer County (Wildcat)—		
Sam Kruger et al, Turbeville 1	*	1509
Archer County—		
Chas E. Morrison Dr. Co., Prideaux 6	*	734
Prideaux 7	6	663
Baylor County (Mabelle)		
British-American O. P. Co., Turbeville 4	636	2528
Baylor County (Rendham)—		
P. B. Scott et al, Fayette 1	78	3031
Clay County (Antelope)—		
Shell Oil, Henderson 8	324	3245
Clay County (Hapgood)—		
E. C. Norwood-King Oil Co. Hapgood 3	*	6540
Clay County (Ringgold)—		
Walter Gant et al, Stine 1	*	5807
Clay County—		
Geo. C. Golden et al, 1st Texas Jt. Bank 2 (new pay)	3	355
Kimmell, Lee & Co., Firestone 17	*	384
Republic Nat. Gas. Co. et al, Thornberry 1	*	1435
Sussex Oil Corp., Hamilton 1	*	1113
Cooke County—		
Bridwell Oil Co., Trew 5-B	*	1806
Kewyanee Oil Co., Hyman-Lanier 14-B	10	1587
Kingery Bros., John Bayer 1	12	1643
Russell & Harwell, Lynn-TCU 3	10	1134
Whitfield-Pearson & Grimes, Sicking 6	282	1261
Grayson County (Wildcat)—		
Texas Co., Hutchinson 1	*	5545
Jack County—		
Dallas Royalty Co.-Napoleonic Oil Corp., Winn-Lawrence 1	271	3240
Three-B Inv. Co., Armstrong 1	268	3177
Helvey 1	745	3123
Montague County (Bonita)—		
Sinclair Prairie, Gilbert 2	*	5582
Montague County (Benton)—		
Stanolind, Dodson 1-B	456	5120
Montague County (Wildcat)—		
Sinclair Prairie, Hawkins 1	*	5848
Wichita County (K-M-A)—		
Golding & Cochran, Preston 1-B	11	4083
Wichita County—		
Mid-Union Dr. Co., Fassett-Tuttle 4-A	*	551
Ted Norwood et al, Guyer 1	*	1551
Underwood Oil Co., Rogers 13	10	1214
Wise County (Wildcat)—		
Britt Cranfill-C. E. Rodgers, McKay 1	*	7154
Wilbarger County—		
Paradise Oil Co., Waggoner Est. 10-B	84	527
Young County—		
L. T. Burns, et al, Bloodworth 4	*	929
Bloodworth 6	*	894
Carey & Carey, Vaughn 1	736	3994
Cato Bros., Hamilton 2	9	887
John P. Evans et al, Rogers 1	*	930
S. D. Glover et al, Luton 1	*	740
J. T. Harrell et al, Rogers 8	155	904
Kimmell, Lee & Co., Campbell 2-A	150	965
Jack Latson et al, Boley 1	45	1086
Mark & J. A. Campbell, Campbell 1	*	1002
H. B. Sparks et al, Clark 5	96	874
P. B. Worthington et al, Rogers 1	*	955
Young County (Wildcat)—		
Pet. Producers Co., Stewart 1	*	1010
OLD WELL DEEPENED		
Jack County (Wildcat)—		
Wrightsman Oil Co (was H. R. Smith), Yates-Brant 1 (OTD 2560 ft)	*	3551

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Arkansas County (McCampbell)—		
Shasta National, Standard & Greines 1	500	7219
Bee County (Wildcat)—		
Rowe & McBride, Blaschke 1, 202-ac lse, 3½ mi w Skidmore	*	5011
Dewitt County (Wildcat)—		
Atlantic, Zengerle 1, 89.33-ac lse, Chas Lockhart sur, 4000 ft ne Conwell 1	*	9165
Jackson County (Lolita)—		
Humble, L. Ranch 9-A	1000	5934
Magnolia, Mitchell 8	500	5936
Mitchell 9	600	5282
Jackson County (West Ranch)—		
Humble, Vanderbilt-State 6-B	950	5734
Bennett-Fee 5	500	6620
West 126-A	1250	5129
West 128-A	1300	5125
W. R. R. Lavaca, Riverbed-State 6	1450	5624
Jim Wells County (Wade City)—		
Arkansas Fuel, Nollkamper 4	119	4834
Jim Wells County (Orange Grove)—		
Atlantic, Schuenemann 1	250	5220
Jim Wells County (Sandia)—		
O. W. Killam, Wade 13	¶5.0 &	5266
Jim Wells County (Wildcat)—		
Romain S. Waldron, Roth 1, 40-ac tr., Zander Farm lots, 2½ mi sw Orange Grove	*	5405
Lavaca County (Wildcat)—		
McMurrey Ref. Co., Allen & Miner 1, 628.14-ac tr. M. Muldoon sur, 12 mi e Hallettsville, new fld	¶2.0 & 250	8524
Nueces County (Agua Dulce)—		
Boller & Rutledge, Ingram 1	¶2.0 & 200	7005
Nueces County (S. Clara Driscoll)—		
Magnolia, Johnson 7	175	5103
Wellington, Martin 3	150	5257
Nueces County (Stratton)—		
Conroe, Sellers 3-A	275	6513
Southern Minerals, Stratton 8	350	6698
Stratton 9	350	6620
San Patricio County (E. White Point)—		
Republic, Rachal 40	500	5911
R. A. Welch, Fee 9	450	5671
San Patricio County (Midway)—		
Blaffer & Owen, Hutto 1	*	5414
Wm. F. Morgan, Schmidt 2	450	5354
San Patricio County (Wildcats)—		
Coquat & Wilcox, Willman 1, 368-31-ac Willman tr, 1½ mi w Mathis	*	5212
L. A. Douglas, Henry 1, blk 36, Drummond subd, 5 mi se Odem	*	7102
D. P. Neill, Toland 1, lot 14, Coleman Fulton Pastr. Co. lands subd. "A", 2½ mi ne Gregory	*	7013

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County (Casa Blanca)—		
Texas Co., Duval Co. Rch. Co. 41	60	1123
Duval County (Cedro Hill)—		
Humble, Duval Co., Rch. Co. 2-G	63	1453
Duval County (Charamousca)—		
Magnolia, Duval Co. Rch. Co. 11 (289-290)	50	1568
Duval County (Driscoll)—		
Continental, Driscoll 61-A	500	3369
Duval County (E. Cole)—		
E. C. Hubble, King & Harper Est 1	50	1755
Duval County (Hoffman)—		
Gilcrease, Salazar 1	*	2836
T. Rios 1	85	2645
Duval County (Kreis)—		
Osborn & Superior, Kreis 1	*	3433
Duval County (Wildcats)—		
Argo, Gonzalez 1, 80-ac lse. El Senor de la Carrera gr, 10 mi new Fremont, temp abnd	*	6308
G. W. Basom, Tr Soc. for the Prop. of the Faith, BS&F sur 176, 8000 ft s Munson fld	*	1252
Jim Hogg County (Wildcat)—		
M. L. Massingill, McLean 1, sec 3, Las Animas gr, 3960 ft n Davis 1, dis. extension to Holbein fld	77	2808
Texas Gulf, Bute 1, blk 283, J. W. Pippin subd, sh 2, 4½ mi se Randado	*	3714
Starr County (Samfordyce-Sullivan City)—		
Phillips, Saenz 2	¶3.0 & 50	4190
Starr County (Sun)—		
Sun, Montalvo 8-A	*	5156
Starr County (Wildcat)—		
Complete Oil Well Serv. Co., Garcia 1, 100-ac fo, w/2 Porc 100, 1 mi nw Sullivan City	*	4310
Webb County (Killam)—		
W. & R. Killam, Garcia & Villarreal 2	*	2058
Web County (Glen)—		
Transwestern, Yaeger-Stroman 4	140	2162
Zapata County (Lopeno)—		
Jay Simmons, Ramirez 1	¶20.0	2550
Ramirez 2	¶20.0	2380

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bexar County (La Coste)—		
Peacock & Pummar, Peacock & Pummar, temp abnd	*	425
Bexar County (Gas Ridge)—		
Southwest Dr. Co., Covell 9	3	434
Caldwell County (Dale-Bee Creek)—		
Ralph R. Ogden, Miears 8-A	250	2182
Caldwell County (Tinney Creek)—		
Ellmag, Connoly 2	100	2635
F. W. Wiegand, DeVaughn 1	*	2972
Dimmit County (Wildcat, Carrizo)—		
Producers, McKnight-Bennett 1, GWT & P sur 653, in lot 71, 5 w Carrizo Springs, new fld	76	2298
Guadalupe County (Elm Creek)—		
Robertson & Dawson, Dickow 2	4	835
P. G. Rouse, Lenz 5	4	842
Lee County (Wildcat, Leo Prospect)—		
Humble, Melde 1, 158-ac tr, L. P. Rucker sur, 13 mi nw Giddings	*	6221
Medina County (Wildcats)—		
Chas. P. Cartter, Chandler 2, 100-ac tr, J. Hoff sur 12, 11 mi w Devine	*	1111
Lewis Prod. Co., Blatz 1, Martin Nester sur, 4 mi se Devine	*	3238

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Brazoria County (Old Ocean)—		
Harrison & Abercrombie, Cason-Brockman 1	300	10,455
Texas, Walker 1	485	10,990
Brazoria County (West Columbia)—		
Hogg, Hogg Fee 2-A	305	4672
Texas, Phillips 19	85	5681
Brazoria County (Wildcat)—		
Rowan & Nichols, Mattingsly 1	*	8405
Chambers County (Caplen)—		
Sun, State 1-27	357	6205
Harris County (Dyersdale)—		
Tilson Construction, Haas & Thompson 1	90	4073
Jefferson County (Lovell's Lake)—		
Humble, Broussard Trust 26	87	7811

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Magnolia, Fee (tr. 244) 96	119	3098
Shell Oil, Percival 1	†	3110
Gray County—		
Cities Service, Walberg 8	71	3075
Stanolind, Cobb 8-A	55	3346
Hutchinson County—		
J. E. Crosbie, Inc., Pitts 38	421	2850
Gulf & Panhandle Ref. Co. Dial 101	191	3060
A. C. Coates et al, Starnes 5	80	3111
Phillips Pet., Cockrell 48	263	3019
Jordan 11	46	2982
Harry Stekoll et al, Christian 1	47	3078
Wheeler County—		
Cub Oil Co., Major 2-A	20	2464
El Bar Corp., Parrott 1-A	*	2430

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Braxton County—		
Pitts. & W. Va. Gas, Fox 7772	*	2020
Young 7770	*	2053
Cabel County—		
W. Va. Gas, Hay 1	¶1.18	3220
Calhoun County—		
Coleman & Hamilton, Cunningham 3	27	2236
Clay County—		
Pitts. & W. Va. Gas, Boggs 7765	*	2054
Fayette County—		
Northeastern O. & G. Co., Venetta Land 61	¶0.03	1700
Gilmer County—		
F. G. Bish, Messenger 3	¶0.04	1890
Kanawha County—		
Poca Fork, Moore 1	¶2.11	5346
United Fuel, Pruitt 4880	¶ 1.5	5058
South Penn, Burdette 1	¶ 1.5	1669
Lincoln County—		
Sweetland Land & Min. Co., Evans 1	0.04	2264
Putnam County—		
Summit Gas Co., Paul 1	¶0.15	2070
Ritchie County—		
South Side Gas Co., Powell 1	¶0.28	1823
F. S. Deem, Stephens 1	*	2140
Taylor County—		
Pitts. & W. Va., Brightwell 6119	¶	2505
Upshur County—		
Pitts. & W. Va. Gas, Lorentz 7777	*	4679
Wayne County—		
United Fuel Gas, Adkins 1	¶0.03	2996
Wirt County—		
Oil City Trust, Kidwell Hrs. 14	*	1051

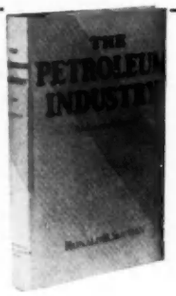
The

PETROLEUM INDUSTRY

An Economic Survey

By RONALD B. SHUMAN

A BOOK THE ENTIRE INDUSTY IS TALKING ABOUT



For the engineer, operator, executive, investor, and retailer—it is a thoroughly up-to-the-minute account of the business and organization of the industry.

Claude V. Barrow, of the DAILY OKLAHOMAN says—

"Men within the industry should study — not read — it through. An exceptional piece of work . . ."

The INDUSTRIES COMMITTEE of the A.P.I. recommends it as—

"A successful effort to interpret the problems and spirit of the American petroleum industry . . . calm, straightforward, and reasonable."

THE OIL WEEKLY says—

"Having neither bones to pick nor irons in the fire, Shuman has reduced the industry to common-sense economic essentials."

48 TABLES, 14 FIGURES, 298 PAGES, $3.00

Send orders to

The GULF PUBLISHING COMPANY

P.O. BOX 2608 **HOUSTON, TEXAS**

WILDCAT REPORT
New Starts and Completions

ALABAMA
FIRST REPORT

Limestone County—G. T. Shaw's Johnson & Thompson 1, c nw ne 15-2s-4w, dr 365 ft.

ARKANSAS
COMPLETION

Madison County—Donald Trumbo's Ogden 1, ne ne 17-14n-25w, elev 1615 ft, showed 500,000 ft gas 235-243 ft in Wedington, 1,000,000 ft gas at 419 ft, 470 ft, 640 ft, so & sg sand in St. Peter 1105 ft, 1,500,000 ft gas at 1505 ft, dropped to 36,000 ft, abnd 1505 ft, dolomitic lime & sand (Cotter).

CALIFORNIA
FIRST REPORTS

Kern County—F. B. Copeland's Thomas 1, sec 15-26-27, rig Mt. Poso area. Trico O. & G. Co.'s Coffee 5, sec 8-28-29, lcn, Round Mountain area.

Los Angeles County—J. E. Pettijohn's Dominguez Est. 1, nw corner Victor & Huntington, lcn, Redondo area. Bass, Goodnight & Westlund's No. 1, sw Frigate and Muretania, lcn, Torrance-Wilmington area.

Tulare County—V. F. Arnold's Arabella 1, sec 5-23-28, lcn, Terra Bella area.

COMPLETIONS

Kern County—Richfield Oil Corp.'s Wheeler Ridge KCL 2, sec 28-11-20, abnd 11,681 ft in hard shale, Wheeler Ridge area.

Yolo County—Standard's Tippetts 2-1, sec 9-12-3, abnd 3240 ft, Rumsey Hills area.

KANSAS
FIRST REPORTS

Reno County—Bay Pet. Co.'s Woodson 1, c e½ ne nw 28-26-9w, lcn.

Rice County—Bradley Oil Co.'s Roclf 1, c n½ nw nw 24-18-10w, dr, Sharon Dr. Co. et al's Nevious 1, swc ne 21-19-10w, lcn. Cochran et al's Miller 1, c n½ nw nw 31-20-9w, pits.

Russell County—Shell's Ruby 1, nwc ne 36-14-13w, 2½ mi w Greenvale pool.

COMPLETIONS

Stafford County—Derby, Comanche Dr. Co. et al's Roach 1, nwc se 12-22-14w, 5 mi w Drach pool, new fld, Lansing 3425 ft, Oolitic zone 358-88 ft, fair to poor porosity with show dead oil, top Sooy 3697 ft, Viola 3698 ft, Simpson shale 3707 ft, Arbuckle 3747 ft, td 3787 ft, 1000 gal butane, 1000 gal acid, 128 bbls 26-gr, named Seward pool.

Woodson County—Aikman & Braden et al's Sasse 1, nw ne sw 36-23-13e, Wintershied area, Mississippi 1708 ft, 1500 gals acid, hfw, abnd 1761 ft.

NORTH LOUISIANA
FIRST REPORTS

Catahoula Parish—H. L. Hunt's Anderson 1, se se 31-10n-6e, rig.

La Salle Parish—Louark Prod. Co.'s Delta Lbr. Co. 1, c sw se 27-6n-4e, dr 610 ft.

COMPLETIONS

Grant Parish—Bering Oil Co.'s Goodpine Oil Co. 1, sw se 18-8n-1w, abnd 4664 ft.

Claiborne Parish—Skelly Oil Co. et al's (formerly V. A. Hardin et al) Valentine 1, nw nw 31-20n-6w, elev 404 ft, Nacatoch 2290 ft, chalk 2555 ft, anhydrite stringer 4394 ft, massive anhydrite 4560-4798 ft, Gloyd (Glen Rose) 5100 ft, Travis Peak 5985 ft, Travis Peak sand 6157-70 ft, 6213-37 ft and 6317-32 ft, tested at various levels, flowed some oil, completed 2 mil ft gas, spray distillate, td 6507 ft.

SOUTH LOUISIANA
COMPLETIONS

Jefferson Parish—Titanic Oil Co.'s Marreoro Land Co. 1, disc new Westwego fld, sec 2-13s-23e, blowout 9855 ft stk dp, pb s/t 10,011 ft, sds 9825-63 ft, 9940-98 ft, 48 perf 9830-42 ft, 238 bbl 30.3-gr oil dly via 7/64-in ch, tbg/csg pressure 2050/2250 lbs.

Vermilion Parish—Union Oil Co. of Calif.'s School Board 1-B, sec 16-15s-1e, new sd East White Lake (Schooner Bayou) fld 480 bbl 37.4-gr oil dly via ¼-in ch from 33 perf 9863-90 ft.

MICHIGAN
FIRST REPORTS

Allegan County—Bridger Basin Oil Corp.'s Meredith 1, sw sw se 5-2n-11w, dr.

Clare County—Union Dr. Co.'s Consumers 1, n½ nw nw 16-20n-5w, dr.

Midland County—Sun's Consumers 2, c s½ sw se 9-16n-1w, dr.

Van Buren County—A. R. Urion's Wilson 1, nw nw nw 3-1s-16w, dr.

COMPLETIONS

Cass County—Tamblyn Dev. Co.'s Good 1, sw se sw 15-8s-15w, Traverse 642 ft, Trenton lime 2169 ft, abnd 2312 ft.

Clare County—Pure's State A1, c n sw ne 1-18n-6w, Dundee 4011 ft, abnd 4038 ft.

Ottawa County—Southwest Dev. Co.'s Purdy 1, se se se 22-8n-13w, Traverse 1950 ft, abnd 2009 ft.

MISSISSIPPI
COMPLETIONS

Sharkey County—British American's Houston Est. 1, c n½ ne 23-11n-7w, elev 98 ft, chalk 3271 ft, Eutaw 3282 ft, Tuscaloosa 3284 ft, abnd 4027 ft.

Issaquena County—E. C. Johnston's Charping 1, c ne nw 29-10n-8w, elev 110 ft, abnd 5655 ft in Glen Rose, deepened from 5540 ft where abnd last year.

NEBRASKA
FIRST REPORT

Adams County—John Parson et al's Weeks 1, sec 23-8n-11w, mim.

NEW MEXICO
FIRST REPORT

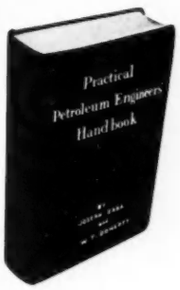
Torrance County—Orville J. Lee et al's Milburn 1, c sw sw 36-7n-7e, lcn.

COMPLETION

Eddy County—Suppes & Suppes' Rogers 1, se sw ne 10-18s-26e, elev 3335 ft, abnd 1134 ft.

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

SECOND EDITION
Revised and Enlarged
By JOSEPH ZABA, E.M.M.Sc.
and
W. T. DOHERTY



This book was written by practical oil men. The tables were compiled so that they can be used by anyone to meet practical field situations without further calculations, and will fit 99% of the conditions under which the average operator is working in the field.

The second edition of the PRACTICAL PETROLEUM ENGINEERS' HANDBOOK has been completely revised and enlarged. The many changes which have been made during the past two years in the Standard Specifications of the American Petroleum Institute, particularly in pipe specifications, are incorporated in the new edition. Several tables are rearranged and charts enlarged to facilitate their use. Table of Contents and Index are more complete. Also about 90 pages of new formulae, tables, charts and useful information have been added.

This handbook was compiled and published for the purpose of saving the time of operators, engineers, superintendents, foremen and others.

TABLE OF CONTENTS

Chapter I — General Engineering Data
Chapter II — Steam
Chapter III — Power Transmission
Chapter IV — Tubular Goods
Chapter V — Drilling
Chapter VI — Production
Chapter VII — Transportation

Semi-Flexible Fabrikoid Binding, size 6 x 9. 492 Pages.
Price: $5.00 Postpaid

SEND CHECKS TO THE
GULF PUBLISHING COMPANY
P. O. BOX 2608, HOUSTON, TEXAS

SAND BANUM

ALL YOU NEED TO KNOW
For the prevention and removal of boiler scale and corrosion

"The Entirely Different Boiler and Engine Treatment"

BE A SKEPTIC — Ask for proof on this safe, certain and economical way.

AMERICAN SAND-BANUM CO., Inc.
9 Rockefeller Plaza — New York City
WESTERN SAND-BANUM CO.
Houston, Texas — Fresno, Calif.
Export Representative, PETROLEUM MACHINERY CORP.
30 Rockefeller Plaza — New York City

OKLAHOMA

FIRST REPORTS

Seminole County—P. J. McIntyre et al's Brown 1, sw se ne 14-9n-7e, lcn.

Tulsa County—Eppler et al's McBirney 1, c sw sw 12-18n-13e, sd 1250 ft.

COMPLETIONS

Muskogee County—Frank Wagseter et al's Smith 1, se nw se 15-14n-19e, 2 mi se Jolly-Patton pool, sd 684-94 ft, shale 794 ft, lime 890-96 ft, lime 839-950 ft, sg, abnd 960 ft.

Okfuskee County—Deep Rock et al's Davis 1, sw se ne 20-11n-9e, 2½ mi ne East Cromwell, new fld, Hunton 3871 ft, Sylvan 3986 ft, Viola 4050 ft, Dense 4068 ft, Dolomite 4073 ft, 2nd Wilcox 4105 ft, td 4192 ft, electric log, fill 1300 ft salt water 2 hours, pb 3986 ft, perf 40 holes 3916-60 ft in Hunton, 2000 gals acid, 58,284,000 ft gas, 80 bbls dist, rp 1500 lbs. Shell's Davis 1, swc 18-13n-9e, 3 mi s Welty, Booch 3235 ft, shot 10 qts 4107-17 ft in Wilcox, swab 16 bbls oil, 81 bbls water in 24 hours, pb 4001 ft, perf 26 holes 3940-66 ft in Hunton, 1000 gals acid, abnd 4127 ft.

Pawnee County—Greer et al's Isaacs 1, nw sw se 25-20n-6e, Maramec dist, abnd 55 ft.

SOUTH TEXAS

FIRST REPORTS

Aransas County—Bay-Tex Oil Corp. & Atlantic Ref. Co.'s McCulloch 2, cntr of 60-ac tr, blk 14, McCampbell Rch subd, n McCulloch 1, plugged well, ru.

Bastrop County—J. B. Pathy Co.'s Zilas 1, 625-ac tr, T. J. Gazley sur, 1 mi s Smithville, lcn.

Bexar County—Leavitt Corning, Jr.'s Bitter 1, 460-ac lse, J. M. Bercerra gr, 1 mi sw Gas Ridge fld, cont J. C. Olhausen, mi.

Caldwell—Ogden & Riddle Oil Co.'s Copeland 1, 72-ac lse, N. Kelley sur, 4 mi se Dale, cont Ralph R. Ogden, 3000 ft test, sp.

William M. Barret, Inc.

Consulting Geophysicists

Specializing in Magnetic Surveys

Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.

GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

THE FORT WORTH LABORATORIES

Analysis of oil field brines, cores, gas, oil, and minerals. Field gas testing. R. H. Fash, Vice-President; Long Distance 138. 828½ Monroe Street, Fort Worth, Texas.

HOUSTON LABORATORIES

Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Texas

PATENTS

Patents, Trade Marks, Copyrights and Infringement Litigation

HARDWAY & CATHEY
428-29-30 Bankers Mortgage Bldg.
Phone Capitol 9756 Houston, Texas

The Firm of
JACK A. SCHLEY
ATTORNEYS AT LAW
PATENTS - INFRINGEMENTS - OPINIONS
1801-3 Commerce Bldg. — Houston
1807-11 Tower Petroleum Bldg. — Dallas
San Antonio — Washington, D. C.

Shilstone Testing Laboratory, Inc.

Chemical Analyses
Oil, Water, Gas, Etc.
Boiler Water Treatment
Physical Test & Inspection
Houston San Antonio New Orleans
30 Years Experience

Duval County—Continental Oil Co.'s Driscoll 5-B, Palo Blanquite gr, ab 174, on 3920-ac "B" lse, 9400 ft s 1-B, 4500 ft test, dr 925 ft. Henderson Coquat's Garcia 1, sh 4, Santa Cruz de Concepcion gr, 4000 ft se Standard of Texas Garcia 1, 5500 ft test, Standard of Texas farmout, mir, Coquat rig. Henderson Coquat's Ysidro Garcia 1, 74.58-ac tr 50, Phillips Dr. Co.'s O. & G. lse, subd Ysidro Garcia rch, 7¾ mi se Realitos, 6500 ft test, ru. Graham Bros.' Holzapfel 1, sw¼, nw¼ sur 178, on 40-ac lse, blk 8, sec 178, 1320 ft n Giblin Holzapfel 1, 20 mi nw Freer, 1600 ft test, lcn.

Jim Hogg County—F. A. Gillespie & Sons Co.'s Gutierrez 1, blk 33, S. P. Peebles sur 582, 12,000 ft n Manila fld, 25 mi sw Hebbronville, lcn.

Nueces County—Sun Oil's Klostermann 1, nw¼, sec 145 Brannigar Bros. subd, Clarkson Rch, on 160-ac lse, 6 mi se Robstown, 7000 ft test, lcn.

Refugio County—Coronado Corp.'s Rooke 1-B, 329-ac lse, J. M. & G. Cobain sur, 3 mi s Woodsboro, 4930 ft nw Rooke 2, gas well, elev 45 ft, 5000-ft test, lcn. Southern Minerals Corp.'s Wood 1, 349-ac lse, Anastacio Reojas sur, 3 mi se Refugio Townsite, 7000 ft test, lcn.

Starr County—Continental's Davenport 1-D, CCSD&RGNG sur 530, on 1140-ac lse, 1½ mi s prod at Rincon, lcn.

Webb County—Sam Cunningham's Dannelly 1, ne¼, sec 736, on 40-ac lse, out of blks 5 & 6, sec 736, 3 mi w Bruni, 2700 ft test, ru. W. H. Holland's Bruni 1, sw¼ sur 446, 7 mi sw Bruni, 3000 ft test, elev 790 ft, lcn.

COMPLETIONS

Bee County—W. Earl Rowe & W. C. McBride's Blaschke 1, 202-ac lse, F. Wagenfuch sur, 3½ mi w Skidmore, abnd 5011 ft, W. R. Quin cont.

Dewitt County—Atlantic Ref. Co.'s Zengerle 1, 89.33-ac lse, Chas Lockhart sur, 4000 ft ne Conwell 1, disc, abnd 9165 ft, cont by Otis Dyer.

Dimmitt County—Producers Corp. of Nev.'s McKnight-Bennett 1, GWT&P sur 653, in lot 71, 5 mi w Carrizo Springs, comp 76 bbls, csg pressure 90 to 250 lbs, tbg zero to 250 lbs when shut in, new fld.

Duval County—Argo Oil Corp.'s Gonzalez 1, 1, 80-ac lse, El Senor de la Carrera gr, 10 mi nw Fremont, temp abnd 6308 ft, G. W. Basom, Tr.'s Society for the Prop. of the Faith, ne¼, BS&F sur 176, 16 mi nw Freer, 8000 ft s Munson fld, abnd 1252 ft.

Jim Hogg County—M. L. Massingill's McLean 1, sec 3, Las Animas gr, 60-ac lse, 15 mi sw Hebbronville, comp 77 bbls on pump, no gas, td 2808 ft, extends Holbein fld 3960 ft n. Texas Gulf Prod. Co. et al's Bute 1, blk 283, J. W. Pippin subd, sh 2, 4½ mi se Randado, abnd 2714 ft.

Jim Wells County—Romain S. Waldron's Roth 1, 40-ac tr, Zander Farm lots, 2½ mi sw Orange Grove townsite, abnd 5405 ft.

Lavaca County—McMurrey Ref. Co.'s Allen & Miner 1, 628.14-ac tr, M. Muldeen sur, 12 mi e Hallettsville, flowed 150 bbls 50-gr distillate and 2,500,000 ft gas per day, 3/16-in ch, 2300 lbs tp, 2350 lbs cp, perf 8468-71 ft, new fld.

Lee County—Humble's Melde 1, 158-ac tr, L. P. Rucker sur, 13 mi nw Giddings, abnd 6221 ft, Humble rig.

Medina County—Chas. P. Cartter's Chandler 2, 100-ac tr, J. Hoff sur 12, 11 mi w Devine, abnd 1111 ft. Lewis Prod. Co.'s Blatz 1, Martin Nester sur, 4 mi se Devine, abnd 3238½ ft, cont, Wiegand Bros.

San Patricio County—Henderson Coquat & H. F. Wilcox O&G Co.'s Williman 1, 368.31-ac Williman tr, Delgado sur, 1½ mi w Mathis, abnd 5212 ft, Coquat rig. L. A. Douglas' Henry 1, blk 36, Drummond subd, E. Nelson 1/3 lge, on 150-ac lse, 5 mi se Odem, abnd 7102 ft. D. P. Neill's Toland 1, lot 14, Coleman Fulton Pastr. Co. Lands subd, "A", 2¼ mi ne Gregory, abnd 7013 ft.

Starr County—Complete Oil Well Service Co.'s Garcia 1, 100-ac Sun farmout, w/2, porc. 100, 1 mi nw Sullivan City, abnd 4310 ft.

West Central Texas

FIRST REPORTS

Eastland County—D. Tomlinson Jr. et al's Bennett 1, SEc ne H&TC Ry sec 6, blk 2, lcn. J. H. Haynes et al's Beene 1, nwc e½ sw H&TC Ry, sec 13, blk 3, lcn.

Jones County—Danciger O&R, Inc's Foster 1, w 100-ac of sw¼ T&P sec 13, blk 17, rig.

Shackelford County—R. H. Roark et al's Lee 1, se ne nw T&P Ry, sec 37, blk 12, lcn. Fortex Oil Co.'s McKeever 1-14, near c ne nw H&TC sec 14, blk 3, sp.

COMPLETIONS

Eastland County—C. D. Lane et al's Mason 1, near se nw nw D&DA sec 13, elev 1320 ft, abnd 1142 ft.

McCulloch County—A. K. McCord et al's Eubanks 1, J. Minor sur 451, abnd 323 ft, Nelson 1, E. Green sur 957, abnd 331 ft.

Parker County—W. E. Brown & Gardner Bros.' Gilbert 1, most s/nwc of GWT&P sur 1958, jkd at 4832 ft, pb for 50-qt nitro shot 2838-80 ft and abnd.

Shackleford County—R. T. Nail et al's Cook 1, NWc se sw E.T. Ry sec 53, abnd 1283 ft.

TEXAS GULF COAST

COMPLETION

Brazoria County—Rowan & Nichol's Mattingly 1, HT&B Survey A-303, 3 mi se Manvel, abnd 8405 ft, sw in all sds.

NORTH TEXAS

FIRST REPORTS

Archer County—Consolidated Oil Co. et al's Humphrey 1, swc of E. B. Heath sur, A-176, mim.

Clay County—Claude E. Riley et al's Reid 1, sw sw blk 141, Byers subd, sp on 1500-ft test.

Jack County—Reed & Craft's Richards 1, C. Gates sur A-237, lcn 3500-ft test.

Montague County—Redman Bros. et al's A. Hardy 1, nec of 41¾-ac tr, Fielding Secrest sur, A-665, lcn 2500-ft test.

Young County—Rhea Anderson et al's Mulinax 1, TE&L sec 168, sp on 1000-ft test. Hayden Farmer et al's Casey 1, se TE&L sec 1396, sp on 900-ft test. E. L. Orr et al's Edwards 1, TE&L sec 1481, lcn. M. R. Stipe et al's Bloodworth 1, nwc s½ se TE&L sec 194, dr 1110 ft. E. D. Willis et al's Stewart 1-D, David Dawson sur A-76, lcn.

COMPLETIONS

Archer County—Sam Kruger et al's Turbeville 1, sec nw blk 170, R. Carson sur, abnd 1509 ft.

Clay County—Geo. Golden et al's 1st Texas Jt. Stock Land Bank 2, blk 9, Thornberry sur, (first oil well in gas area) sand 334-48 ft, td 355, pumped 3 bbls.

Grayson County—Texas Co.'s Hutchinson 1, se 997-ac tr, Sam Stewart sur A-1096, Springer shale 4500 ft, jkd at 5545 ft, pb and perforated pipe, abnd.

Montague County—Sinclair Prairie's Hawkins 1, nec of 241.2-ac tr in s½ H&TC sec 17, A-362, 2 mi se Ringgold, Bend 5606 ft, Ellenberger 5806 ft, abnd 5848 ft.

Wise County—Britt Cranfill-C. E. Rodgers' McKay 1, near c s½ nw Falls CSL sur, Palo Pinto lime 1490-1785 ft, Bend 5580 ft, Barnett shale 6450 ft, Mississippian 6840 ft, Simpson 6870 ft, Ellenberger 7005-7154 ft, pb and jkd.

Young County—Pet. Producers Co.'s Stewart 1, TE&L sec 229, abnd 1010 ft.

EAST TEXAS

FIRST REPORTS

Cherokee County—L. R. Lytle-Donald Marr et al's Thomas 1, c of se 40 acres of 108-ac tr, Barbara C. Lewis sur, 1 mi ne Cuney, rur.

Smith County—Sells Petroleum, Inc.-Delta Dr. Co. et al's Kay 1, c of 20 acres out of nec of Nicholas Wren sur, Linn Springs area cem surface pipe.

Wood County—F. R. Jackson-W. C. McGlothlin et al's Moore 1, c of 10-ac tr, Joseph Knight sur, Crow area, lcn.

COMPLETIONS

Limestone County—D. Harden-C. S. Amos' Hammond 1, n part Jesse Folk sur, 3 mi nw Kosse, elev 512 ft, Austin chalk 2689-2948 ft, Woodbine 3178 ft, Georgetown 3493 ft, Paluxy 4248 ft, first Glen Rose 4293 ft, anhydrite 5183-98 ft, Pettit 5690 ft, abnd in Travis Peak 5858-5955 ft.

Rains County—Plains Prod. Co.'s Foster 1, nec 81-ac tr, T. Cummins sur, elev 470 ft, Pecan chalk 2480-2736 ft, Austin chalk 3800-4145 ft, abnd in Woodbine series 4670-4752 ft.

WEST TEXAS

FIRST REPORTS

Fisher County—P. R. Long et al's Maberry 1, m/e/se cor A. A. Spring sur, rotary.

Loving County—Pinal Dome Oil Co.'s Fee 1, c w¼ of w¼ PSL sec 15, blk C-26, mim.

Mitchell County—C. E. Casebolt et al's Franklin 1, ne ne nw T&P sec 50, blk 27, mim.

COMPLETIONS

Ector County—Phillips Pet. Co.'s Codwen-Embar 1-A, c se se T&P sec 6, blk 44, T-1-N, elev 3224 ft, used 2500 gals acid broken pay 4210-4312 ft, flow 34 bbls oil & 3 bbls water initial, new pool.

Runnels County—A. J. Johnson et al's Fletcher 1, E. W. Bull sur 333, abnd 515 ft.

Tom Green County—Dan Short et al's Davidson 1, nw part L. P. Moore sur, elev 1904 ft, Cisco 2414 ft, Canyon 3505 ft, abnd 3620 ft.

Ask Repressuring Authority For Ezzell, McMullen County

The Edwin M. Jones Oil Company has requested authority to repressure the Ezzell field, McMullen County. Ten wells would be used for the purpose, according to testimony offered at a hearing before the Texas Railroad Commission last week.

E. C. Roach, petroleum engineer for the company, said there are 85 producing wells in the field. He requested that the allowables for the input wells be assigned to other producers, if the pressure project is installed.

MEN IN THE INDUSTRY'S NEWS

M. L. MAYFIELD has resigned as division production engineer for Cities Service Oil Company at Gladewater, Texas, to become chief petroleum engineer for the Cotton Valley Operators Committee, which is currently constructing and will operate the world's largest recycling project in the Cotton Valley field, Louisiana. He is a graduate of the University of Oklahoma, and has worked in Oklahoma City, Seminole, West Kansas and East Texas fields, as well as in Bartlesville and New York. He is secretary-treasurer of the East Texas Chapter of the American Institute of Mining & Metallurgical Engineers.

CHARLES J. TUCKER, official of Tucker Oil Company, Wichita Falls and a veteran North Texas operator, has been elected president of the North Texas Oil & Gas Association, succeeding D. H. Bolin. J. T. Harrell, banker and operator, and Fred Sehmann, secretary-treasurer of the Petroleum Producers Company, were chosen vice-presidents, and Dave Gray was retained as executive vice-president. The following were added to the board of directors: H. B. Dudley, A. A. Horwitz, J. C. Jennings, W. H. Packham, Ben H. Rankin and R. C. Underwood. Installation of officers and directors will be deferred until the annual meeting, scheduled for Wichita Falls March 1.

TOM B. OWENS, Fort Worth operator and co-discoverer of the Ivy and Hults-Owens pools, departed last week for a seasonal visit at his winter residence in Miami, Florida.

JOHN W. CHISHOLM, North Texas scout for The Texas Company, has been transferred from Wichita Falls to Abilene, relieving C. D. George, who has been assigned to the North Texas territory.

LEONARD C. RITTS, vice president and treasurer of Devonian Oil Company Tulsa, has been made president of the company, succeeding the late Archibald W. Leonard. A native of Butler, Pennsylvania, and a 1912 graduate of Haverford College, he went into the banking business in Western Pennsylvania and remained there until 1920. During 1918, he served with the Navy. In 1920, he went to Tulsa and was named vice president and treasurer of Oklahoma Natural Gas Company, also serving as a director of the company, and this connection continued through 1928. In 1925, he was made vice president and treasurer of Devonian Oil Company. Oklahoma Natural Gas Company re-named him as a director in 1933, and he still holds that office.

E. S. Calvert, production superintendent, was advanced to vice president, H. R. Dean, former assistant secretary-treasurer and purchasing agent, was named treasurer, and H. E. Geiger, was promoted to assistant secretary. H. C. Milhoan, president of Milhoan Drilling Company, was named a director. Other officers are George D. Foster, secretary, and W. E. Lofton, assistant treasurer and assistant secretary.

CHARLES R. MESSINGER, 57, president of Chain Belt Company, died February 4 of a heart attack at his home in Milwaukee. A 1906 graduate of the Sheffield Scientific School of Yale University, he began his career as salesman for Harbinson-Walker Refractories Company, was later a director of Federal Malleable Company, Interstate Drop Forge Company, Continental Casualty Company and Milwaukee Gas Light Company. He became chairman of Chain Belt Company in 1934.

D. R. LAUCK, Wichita operator, has been elected president of the Kansas Independent Oil & Gas Association, succeeding William L. Ainsworth. Gear Stoddard was elected vice president of the Wichita district, and Ralph Nicholson, Ellis, and John Denman, Sedan, were re-elected vice presidents of the western and eastern districts, respectively. James Davis, Jr., Wichita, was re-elected secretary, and John Harwood, Wichita, was re-elected treasurer.

W. R. CANADA, Stanolind Oil & Gas Company, Lake Charles, has been elected president of the South Louisiana Geological Society. Other officers named were P. H. Jennings, Magnolia Petroleum Company, Lake Charles, vice president; E. M. Baysinger, Lake Charles, secretary, and Baker Hoskins, Shell Oil Company, Lake Charles, treasurer.

DR. FREDERICK G. CLAPP, New York, former confidential advisor to the Shah of Persia, will discuss "The Oil Fields of the Iraq-Iranian Area" before the East Texas Section of the American Institute of Mining & Metallurgical Engineers, meeting in the Adolphus Hotel, Dallas, February 11. A banquet is scheduled for 7 p. m.

AL WYNN has been named district geologist at Wichita, Kansas, for Kerlyn Oil Company. He is a graduate of the University of Oklahoma, and for the past year and one-half has been located in South Dakota.

TED W. McCUISTION, Oklahoma representative for Baird Manufacturing Company, Tulsa, will address the Engineers Club of Tulsa on February 10 on "Recent Developments Increasing Well Pump Valve Efficiency."

B. R. SCHABARUM has been named sales manager of the Texas division of The National Supply Company, with headquarters at Fort Worth. He has been with the company since June, 1926, when, following his graduation from the California Institute of Technology in mechanical engineering, he became a member of the company's engineering staff at Toledo. From 1926 to 1931, he engaged in laboratory research at Toledo and field investigation in the California, Mid-Continent and Gulf Coast areas. In 1931, he was assigned to the field engineering staff at Tulsa. In June, 1938, Schabarum was transferred to the field engineering staff of the Texas division at Ft. Worth, and the following year joined the company's sales staff in the Texas division. On June 1, 1939, he was appointed assistant sales manager of the division, and continued in this capacity until his recent appointment as division sales manager.

JOHN H. PATTERSON, former engineer with W. C. Norris, Manufacturer, Tulsa, is now with Benham Engineering Company, Leesville, Louisiana.

PAT S. LEWIS, former vice president in charge of sales, Lewis Brothers Company, Tulsa, is now manager of the Tulsa office of Wylie-Stewart Machinery Company.

DR. C. E. DOBBIN, United States Geological Survey, addressed the Kansas Geological Society February 4 on "The Economic Importance of Minerals in Present World Affairs."

R. L. GORDON, vice president and chief counsel for Indian Territory Illuminating Oil Company, recently addressed the Washington County (Oklahoma) Bar Association, Bartlesville, on "Unitization for Secondary Recovery."

W. A. MONCRIEF, Showers & Moncrief, Inc., Fort Worth, has been named chairman of a standing committee of the Independent Petroleum Association of America to cooperate with the Interstate Oil Compact Commission. The compact, by resolution, recently invited national associations of oil producers to name representatives to attend commission meetings and to present information that would be helpful in planning for joint action by states on conservation of oil and gas.

Members of the committee are: F. M.

EDWARD FORGED STEEL CHECK VALVES

For Boiler and Blowout Preventer Service
600 lb. swp. Screwed Ends. Union Bonnet. Bodies and union nuts of heat-treated forged or rolled steel. Stainless steel ball is guided by two steel ribs. A spring aids in seating. Seat is carefully lapped stainless steel. For use in horizontal or vertical lines. Sizes ¼" to 2". Immediate shipment from large Houston stocks.

ASA WORKING PRESSURE RATINGS
Steam, oil or gas—600 lb. at 750 F.; max. non-shock hydraulic—1000 lb. air temp.; Shell Test—1500 lb. at 125 F. max.

MECO

MAINTENANCE
ENGINEERING CORPORATION
P. O. Box 2637 Phone P-3135
HOUSTON, TEXAS, U. S. A.

in 1941 . . . you'll hear more about

LAMTEX
Casing Pumps

than ever before!

. . . they're profitably producing wells that conventional pumps couldn't handle. This good news is getting around —that's why you'll hear more about 'em than ever before. It's why YOU should find out about 'em for your troublesome wells.

LAMTEX EQUIPMENT CORPORATION
2501 Virginia St. Ft. Worth, Texas

Call: HERSHEL LEWIS, Ft. Worth, Texas
C. T. FAIR, Hutchinson, Kansas
GEO. LAWRENCE, Luling, Texas
R. F. MACKIN, Wink, Texas

MEN IN THE INDUSTRY'S NEWS

George E. Edgett, center, is being presented with a set of golf clubs at ceremonies commemorating his completion of 30 years service with The Carter Oil Company. The presentation is being made by S. F. Mauney, Jr., chemical engineer, while J. J. Conry, company president, right, looks on.

Porter, general manager, Wirt Franklin Petroleum Corporation, Oklahoma City, vice chairman; David G. Gray, executive vice president of the North Texas Oil & Gas Association, Wichita Falls, secretary, and J. S. Bridwell, president, Bridwell Oil Company, Wichita Falls; E. H. Moore, president, E. H. Moore, Inc., Tulsa; Harry Leonard, president, Harry Leonard, Inc., Roswell, New Mexico; O. C. Bailey, Bailey & Trimble, El Dorado, Arkansas; L. M. Moffitt, Triangle Drilling Company, Shreveport; Earl D. Wallace, Petroleum Exploration Company, Lexington, Kentucky; Carl H. Schwyn, president, Security Oil Company, Cygnet, Ohio; Ray L. Cargill, president, Bay State Oil & Gas Company, Kansas City; L. L. Aubert, general manager, Bankline Oil Company, Los Angeles; Dana Hogan, president, Hogan Petroleum Company, Los Angeles; Gilbert J. Mueller, Argo Oil Corporation, Denver; George N. McCabe, Santa Rita Oil & Gas Company, Cut Bank, Montana; A. R. Thompson, Mattoon, Illinois; Frederick Grumme, Premium-Bolyard Company, Indianapolis; James C. Graves, Goll, Graves & Mechling, Saginaw, Michigan; Ralph T. Zook, president, Sloan & Zook Oil Company, Bradford; H. M. Morse, chairman, Mississippi Conservation Commission, Jackson; John M. Lovejoy, president, Seaboard Oil Company of Delaware, New York; W. L. Goldston, Houston; E. J. Sullivan, president, E. T. Williams Oil Company, Casper; Lloyd R. Pickrell, T. C. Johnson, Inc., Wichita, and Dr. J. C. Karcher, Coronado Corporation, Dallas.

F. H. FASCH, of Fort Worth Laboratories, Fort Worth, Texas, will discuss "New Methods of Soil Analysis" at the weekly luncheon of the Houston Geological Society on February 13, at the Texas State Hotel, Houston.

GEORGE E. EDGETT, in charge of the gasoline division of The Carter Oil Company's production department, has retired after serving 30 years and 11 months with the company. He was honored with a dinner given by 17 associates, and was presented with a set of golf clubs. Attending the dinner were J. J. Conry, president; O. C. Schorp, vice president and production manager, and S. F. Mauney, Jr., R. L. Clifton, J. T. Robinson, I. S. Salnikov, P. F. Michaels, W. N. Winters, W. B. Crutcher, H. R. Cook, John Knight, F. W. Brunner, William T. Brown, Arch Perry, W. T. Mills, Clyde Randles and A. C. Lankford.

W. L. JAMES, purchasing agent for Stanolind Oil & Gas Company, has been re-elected for the third successive year as chairman of the Oil Activities Committee of the Tulsa Chamber of Commerce. Howard F. Stover, secretary-treasurer of Gaso Pump & Burner Manufacturing Company, was elected vice chairman.

BLAKE W. CALDWELL, former chief engineer for Walter O'Bannon Company, Tulsa, has been appointed to the engineering staff of the D & B Division of Emsco Derrick & Equipment Company, with headquarters in Los Angeles. He holds a master of science degree from A. & M. College of Texas, and was a member of that school's faculty for three years. He is vice chairman of the American Petroleum Institute's pump manufacturers' subcommittee.

DICK WAGNER, engineer for Halliburton Oil Well Cementink Company, Duncan, Oklahoma, addressed the Seminole Chapter of the American Petroleum Institute's Production Division recently on "Fluid Level Determination in Pumping Wells."

R. S. ELLISON, former president of Stanolind Pipe Line Company and Stanolind Crude Oil Purchasing Company, Tulsa, has been given an honorary life trusteeship by the Oklahoma State Archaeological Society.

H. E. LEEMAN has been transferred to Avant as district manager for Shell Oil Company, replacing J. W. Roche, who is now at Great Bend, Kansas.

MEN IN THE INDUSTRY'S NEWS

DOUGLAS R. BROWN has retired as president and general manager of OCS Manufacturing Company after 21 years continuous service. Casper A. Ruf, president of Parkersburg Rig & Reel Company, succeeds Brown as president, while Don C. Meyer, who has been vice president and treasurer, becomes general manager.

Brown, who will continue as a director of the company, and several associates established the firm in 1919. With him were W. P. Turner, Long Beach, California; the late D. D. Myers, Tulsa; W. R. Wilkerson, St. Louis, and E. J. Exner, Coffeyville, Kansas. The company started with a small shop at Coffeyville, and when Brown and his associates sold to Parkersburg Rig & Reel Company in September, 1939, OCS Manufacturing Company had plants at Coffeyville, Houston and Long Beach.

GUY E. CAMPBELL, chief scout for Sun Oil Company, Tulsa, last week was re-elected general chairman of the Oklahoma Steering Committee on Oil Field Names of the Standing Committee on Oil Field Nomenclature of the Kansas-Oklahoma Division, Mid-Continent Oil & Gas Association. Fred O. Jackson, chief scout for Phillips Petroleum Company, Bartlesville, was re-elected chairman of the Oklahoma Steering Committee on Oil Field Names. Other officers re-elected were Joseph L. Bordon, assistant chief geologist, The Pure Oil Company, Tulsa, general vice chairman, and G. W. Patchett, Mid-Continent Oil and Gas Association, Tulsa, secretary.

Attending the meeting and shown in an accompanying picture, sitting, left to right, are Patchett; Jackson; J. Howard Johnson, chief scout for The Texas Company; W. R. Thawley, chief scout for Gulf Oil Corporation; Vance E. Rowe, president of Petroleum Statistical Guide Company; Borden, and Paul Lyons, chief scout for Stanolind Oil & Gas Company. Standing, left to right, are Paul S. Hedrick, oil editor for The Tulsa World; E. C. Jacobson; Wayne Horne, Mid-Continent Map Company; Paul Potter, chief scout for Shell Oil Company; J. S. Blackman, Corporation Commission of Oklahoma, and Campbell.

W. C. STOUT, South Louisiana district land man for Continental Oil Company, has been transferred from Lafayette to Fort Worth to become division chief of the land and scouting departments. He succeeds Floyd D. Ballentine, who died last November 1.

WENDELL R. CARLSEN has been named sales manager of the centrifugal pump department for the Mid-Continent Division of Pacific Pump Works. He will make his headquarters in Houston.

G. L. IRVINE has been appointed manager of a new Apparatus Agency Sales Section of General Electric Company's Industrial Department.

H. W. LADD, manager of the materials department of Stanolind Oil & Gas Company, Tulsa, has been elected chairman of the Northeast Oklahoma Chapter of the American Petroleum Institute, succeeding Russell S. Knappen, assistant vice president of Gulf Oil Corporation, Tulsa. O. E. McClatchey, purchasing agent for Barnsdall Oil Company, and Fred McConnell, vice president, Lee Drilling Company, were named vice presidents, and Paul S. Hedrick, oil editor of The Tulsa World, was re-elected secretary-treasurer.

JAMES H. DEADERICK, who has been assistant sales manager of the western sales division of Caterpillar Tractor Company since 1939, has been appointed assistant general parts manager. Deaderick, whose headquarters have been at San Leandro, California, has been transferred to Peoria, Illinois. In his new capacity, under the general managership of L. G. Morgan, he will have active charge of all general administrative activities in the parts depart-

Members of the Oklahoma Steering Committee on Oil Field Names of the Standing Committee on Oil Field Nomenclature of the Kansas-Oklahoma Division, Mid-Continent Oil & Gas Association, pictured during their annual meeting in Tulsa.

BROTHER!

HERE'S THE WAY TO CLIP WIRE ROPE WITH A *FIST GRIP*... NOT A ROPE CRIMPING "FINGER-PINCH"

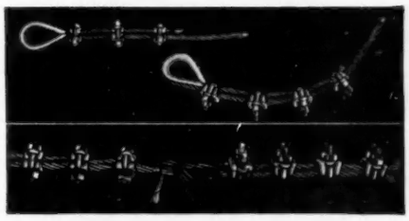
Laughlin drop forged Safety Clips *grip* around wire rope like a *fist* — the rope stays straight — uncrimped — can be used again when the clips are removed.

None of the narrow "finger-pinching" you get with ordinary U-Bolt clips which bow the wire — crimp it — and eventually break it.

Write for free booklet describing tests illustrated below. It will show you how to save on both rope and clips. Use handy coupon below — and mail it today!

YOU NEED FEWER CLIPS

Use 3 Laughlin Safety Clips instead of 4 U-Bolt clips — get the same strength.



OVER 95% ROPE EFFICIENCY

Tests like this—made by a famous engineering school — proved Laughlin Safety Clips delivered better than 95% rope efficiency.

THE THOMAS LAUGHLIN CO.
Portland, Maine W-2

Send me free Safety Clip booklet

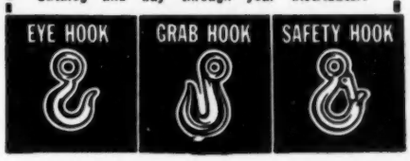
Name .....

Company .....

Address .....

Check here for catalog on items below ☐

Look for Laughlin products in Composite Catalog and buy through your distributor.



JUNK LIKE THIS QUICKLY FISHED OUT

The junk pictured above was recovered by the Cavins clean-out service. Results like this, in less time at less cost, have won world-wide recognition for the Cavins Hydraulic Suction Bailer & Fishing Tool, the Cavins Perforation Washer and the Cavins Screen Cleaner. Call us, regardless of how hopeless the job may seem!

CAVINS

CAVINS BAILER SERVICE

HOUSTON · KILGORE · LAKE CHARLES · CORPUS CHRISTI

MAKING Up a

Single Bolt Applies

Tremendous Equalized

Pressure on the Seat.

THORNHILL-CRAVER COMPANY
HOUSTON

UNIBOLT
Trade Mark Registered U. S. Patent Office
THE ONE BOLT COUPLING

Petroleum Production

By Wilbur F. Cloud

A book dealing with the fundamental operations and technical processes of oil production. It offers to the oil executive, the engineer, and the man in the field a most comprehensive treatment of the subject.

PETROLEUM PRODUCTION contains 613 pages of text, with 280 illustrations and 75 practical tables and charts. Price $5.00. Order your copy today from

GULF PUBLISHING CO.
3301 Buffalo Drive
Houston, Texas

MEN IN THE INDUSTRY'S NEWS

ment, as well as supervision of all parts depots. W. B. Gordon has been appointed parts manager in charge of physical inventory and its control, and A. H. Yingst, parts manager in charge of orders, invoicing, and distributor contact.

MORGAN J. DAVIS, former Gulf Coast division geologist for Humble Oil & Refining Company, Houston, has been named chief geologist, succeeding L. P. Teas, resigned. A graduate of University of Texas, he joined the company in 1925, transfering in 1929 to a Dutch subsidiary of Standard Oil Company of New Jersey to spend five years in Java and Sumatra, Netherlands East Indies. He returned to Humble Oil & Refining Company in 1934 as Southeastern New Mexico division geologist. In September, 1936, he was made Gulf Coast division geologist. H. J. McLellen has been named Gulf Coast division geologist, the position formerly held by Davis, and E. A. Wendlandt has been appointed East Texas geologist at Tyler, duties formerly handled by McLellen.

THEODORE M. CADY has been named superintendent of the land department of Texon Oil & Land Company, with headquarters at Wichita. He was formerly district landman at Centralia, Illinois, for Continental Oil Company.

H. R. SMITH, San Antonio operator, is in South America on a 60-day pleasure trip. From San Antonio, he went to Mexico City, then traveled by air to Buenos Aires. He will visit about twelve countries during his stay.

C. E. NAYLOR, president of Maintenance Engineering Corporation, last week was named chairman of the publicity committee of the Houston Chamber of Commerce.

W. A. DELANEY, operator of Ada, Arkansas, has announced purchase of interests of T. R. Jones, Dallas, and M. A. Mathews, Ada, in the Louisiana-Nevada Transit Company. Headquarters of the company are to be moved from Dallas to Ada. The company two years ago constructed a gas pipe line from the Cotton Valley field of Louisiana to Okay, Arkansas, and is serving industrial plants at Okay and Hope, Arkansas, and domestic consumers in Okay, Fulton, Saratoga, McNab, Taylor and Bradley, Arkansas.

J. G. BONHAM, SR., J. C. Bonham, Jr., and May G. Bonham are organizers of Rockland Oil Corporation, chartered last week as a Texas corporation with headquarters at Colmesneil.

G. A. HARRISON, R. H. Parker and Thomas O. Payne have organized Paltex Oil & Gas Company under Texas corporation laws. Headquarters have been established at Palacios.

A. F. RICHARD has been elected president of The Big Indian Oil & Development Company, Kansas City, Kansas, succeeding H. E. Doudrick. J. W. Garrett was named vice president, and R. K. Pearson, secretary-treasurer. Directors are W. G. Flett, R. F. Hickok, W. C. Hurst, W. P. Kreeger, Hayden Kemper, G. E. McDonald and the officers.

RALPH W. HILL has resigned as engineer for Jarecki Manufacturing Company, Tulsa, to join Benham Engineering Company. He will be stationed at Leesville, Louisiana.

H. W. STRALEY, III, has returned to Waco, Texas, after having spent most of the summer in the Interior Basins and the Appalachian Plateau for the Worthington Development Association.

JOHN R. HALEY, secretary in the Fort Worth division production office of The Texas Company, has been transferred to Houston for similar duties in the general office.

ARTHUR A. SEELIGSON, president of Transwestern Oil Company, recently was installed as vice president of the San Antonio Chamber of Commerce.

Q. C. TAYLOR, David L. Tisinger, and D. K. Eidse last week organized Manitoba Texas Oil Company as a Texas corporation with headquarters in Pecos.

VERONICA T. HYLAND, Bryan Marsh and G. L. Brelsford have chartered Marger Oil Company with headquarters at Tyler, Texas.

BOB KLINE, geologist for Sinclair Prairie Oil Company, has been transferred from the Appalachian basin to Evansville, Indiana.

GEORGE E. KENNEDY, member of the board of directors of Standard Oil Company of California since 1931, has retired.

W. N. SMILEY, tool pusher for Mid-Union Drilling Company, has been transferred from Borger, Texas, to Oklahoma City.

COLIS CHANDLER has been made land man and scout for Deep Rock Oil Corporation in the Illinois-Indiana district, with offices at Evansville, Indiana.

J. N. MILES, engineer with Cities Service Oil Company, has been transferred from Great Bend, Kansas, to the East Texas field.

J. S. OVERSTREET has been placed in charge of wire and cable sales for General Electric Company's Wire & Cable Division.

JIM KAMP, well shooter for Lightning Torpedo Company, Odessa, has moved to Oklahoma City.

FIG. 1501 *(RIGHT)*
CAST STEEL GATE VALVE

FIG. 1511 *(BOTTOM)*
CAST STEEL GLOBE VALVE

FIG. 1515 *(LEFT)*
CAST STEEL ANGLE VALVE

FIG. 1531 *(TOP)*
CAST STEEL CHECK VALVE

READING-PRATT & CADY Helps You Standardize on 150 lb. Steel Valves

The valves and fittings pictured above are typical examples of Reading-Pratt & Cady's extensive line of gate valves, check valves, globe and angle valves—Cast Steel Fittings for 150 lb. Service in the Oil Country. . . . Their use is indicated wherever you handle inflammable and hazardous liquids—wherever there may be surges of pressure, vibration or bending stresses not successfully withstood by iron body valves—for shut off service on tank farms—for fire fighting systems, etc. . . . Use them also for low pressure, high temperature steam—to handle exhaust steam and for auxiliary services such as injector pumps, soot blowers, condensers, heat interchangers. . . . Side wall thicknesses are greater than A.P.I. specifications and therefore promise longer resistance to corrosion and erosion. Write for the details.

READING-PRATT & CADY
READING, PENNSYLVANIA

R
READING
CAST STEEL
VALVES & FITTINGS

P&C
PRATT & CADY
BRASS & IRON VALVES

D'ESTE
D'ESTE
VALVE AND
ENGINEERING
SPECIALTIES

Division of AMERICAN CHAIN & CABLE COMPANY, INC.

New Grease Fittings

insure quick, easy lubrication

OF THE

MISSION PLUG VALVE

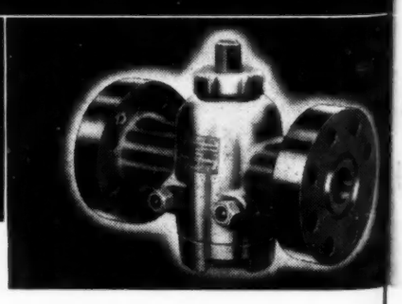
Lubricating grease is easily and quickly forced into grease reservoirs in the Mission Plug Valve. Just turn down screw either with a wrench or a nail, after a stick of grease has been inserted. This forces the grease into the half-circle grease groove on the body — thence into the half-circle grease groove on the core and into grease reservoirs situated inside the c

Without further attention (so long grease remains in the reservoir), pressure in the reservoir automatic returns this "stored grease" to the seal groove, thus maintaining a continu perfect seal. Grease grooves comple encircle each port opening when the va is closed.

Buy Mission Plug Valves. You find this lubricating system adds gre to valve performance.

MISSION MANUFACTURING CO.

HUMBLE ROAD • HOUSTON, TEXAS
EXPORT OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK



NOTES FOR THE Equipment Buyer and User

Printer

CHARLES BRUNING COMPANY

A printer designed to operate with either cut sheets or roll stock and to print ink tracings at from 12 to 15 feet per minute, designated Model 55-BW, has been announced by Charles Bruning Company, 100 Reade Street, New York. The unit measures 32 inches wide, 62 inches long and 48 inches high.

The unit employs a speed indicator at the center of the front, above the

Bruning's Model 55-BW Printer

feed board, to make the speed of the machine visible to the operator at all times. The entire top of the machine serves as a return tray, with the return designed so the tracing enters the tray on the top of the print, the same way as it is inserted in the machine, and necessitating no reversing of the tracing when reinserting it into the machine.

Light source is a 55-watt mercury vapor quartz lamp, designed to furnish uniform exposure without flickering and to last 1000 hours. It is installed in a revolving 9-inch Pyrex contact cylinder.

The printer is equipped with a double centrifugal blower to reduce operating noise, and transmission and motor are resiliently mounted to reduce vibration. An automtaic clutch, operating by a wide-range foot pedal, releases the feed roller so the tracing may be adjusted or removed when necessary.

A hinged section at each end of the printer allows access to all electrical controls and drive mechanism for cleaning and servicing. An automatic switch shuts off the light when the end housing of the tube and cylinder are removed. Ball bearings are employed and, except for electric motor bearings, are factory lubricated.

Packing

Belmont Packing & Rubber Company, Butler & Sepviva Streets, Philadelphia, has issued Catalog 40, containing 84 pages describing its line of packings. It includes a recommendation chart for use of the company's packings, and gives several pages of engineering data, including a steam table, a table on circumferences and areas of circles, a table of decimal equivalents, metric conversion table, and Fahrenheit and Centigrade conversion table. Each of the company's products is described and illustrated, and tables show weights of different sizes in which they are available.

Nickel Alloys

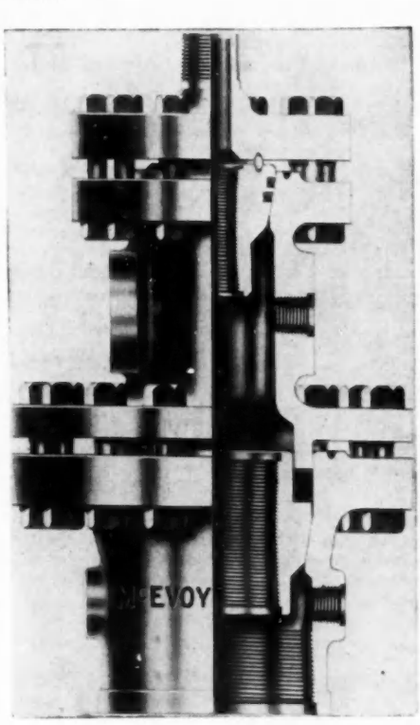
The International Nickel Company, 67 Wall Street, New York, has issued Technical Bulletin T-19 covering shearing and perforating of high-nickel alloys. It contains information on mechanical characteristics of high-nickel alloys as compared to other materials used in deep drawing, and covers die materials, lubricants and drawing practice, along with general information on annealing and pickling of monel, nickel and Iconel.

Casing Nest

McEVOY COMPANY

A series of casing nests for medium-pressure wells, offered with an option of five types of tubing head bonnets, seven types of tubing hangers and three types of casing hangers, has been announced by McEvoy Company, Houston.

The choice of hangers and bonnets is designed to permit any method of well completion, and to allow last-minute changes in a completion program when desired. Modified API flanges permit installation of blowout preventers without necessity of adapters. Flanged tubing outlets and tubing hanger lock screws are available, if desired. The heads are constructed of 100,000-pound tensile strength steel to provide a safety factor.



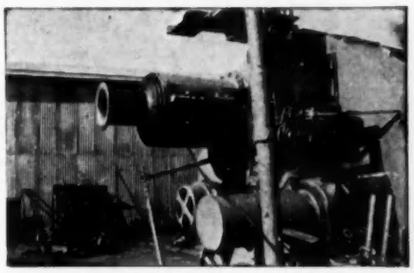
McEvoy Company Well Head

Cathead

SUNSHINE IRON WORKS

A cathead, employing hydraulic control for smooth, constant action and ease of operation, has been announced by Sunshine Iron Works, Odessa, Texas.

The hydraulic control system, requiring no outside power, consists of a master cylinder and two engaging cylinders. In operation, application of pressure to the master cylinder lever engages the free rolling drum with a rotating clutch, and a steel line is spooled onto the drum. A forked spinning line



Sunshine Iron Works' Cathead

is employed to spin the drill pipe and to tong the joint tight in one operation, and by releasing the pressure on the control lever the cathead is disengaged and the line slacked off.

A conventional cathead is incorporated in the design for spinning casing and general pick-up work. The unit employs cone-type clutch, roller and ball bearings.

Liquid Level Gauges

The Bristol Company, Waterbury, Connecticut, has issued catalog 1015 describing its line of float, pressure-bulb, pressure, air-bubbler, counterpoise and differential pressure type water and liquid-level gauges for all types of applications. The instruments are designed for recording, indicating or automatically controlling almost every kind of liquid, whether flowing, turbulent, corrosive, covered with ice or carrying solid matter.

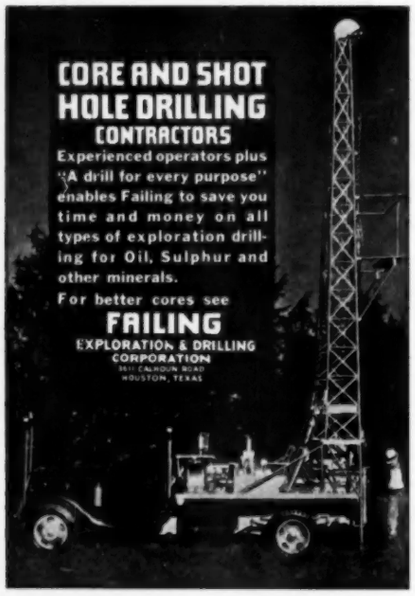
Meter Bell Prover

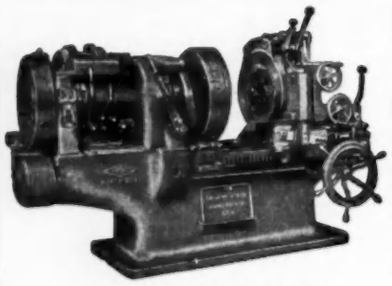
PITTSBURGH EQUITABLE METER COMPANY

A bell-type prover for meters used for measuring gas, designated Emco Type 41, has been announced by Pittsburgh Equitable Meter Company, 400 North Lexington Avenue, Pittsburgh.

In using the device, the bell is guided at both top and bottom by rollers, and a steel-cable-controlled counterbalance is used to reduce friction. Three-point adjustable bell suspension is designed to permit accurate bell alignment.

Three dial-type thermometers are provided to record temperature of the atmospheric air, temperature of the air in the bell, and temperature of the oil seal of the bell. Large airways and streamlined fittings are designed to pro-


CORE AND SHOT
HOLE DRILLING
CONTRACTORS
Experienced operators plus "A drill for every purpose" enables Failing to save you time and money on all types of exploration drilling for Oil, Sulphur and other minerals.
For better cores see
FAILING
EXPLORATION & DRILLING CORPORATION
3511 CALHOUN ROAD
HOUSTON, TEXAS



New Landis 4¾ Receding Chaser Pipe Threading Machine

COMPLETE LINES

Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

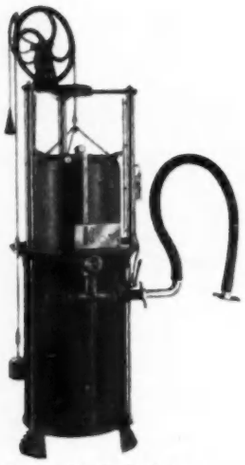
C. J. HARTER, Machinery

4000 Clay, Houston, Texas
Fairfax 1466

TIN END ENVELOPES
for Sand Samples

Made of strong kraft paper, tightly sealed to eliminate leaks. Top end folds over with easy twist and holds contents securely. Most economical for sending and filing of sand samples. Phone, write or wire for our low prices.

GULF ENVELOPE CO.
617 BROOKS Fx. 4171
HOUSTON, TEXAS



Emco Type 41 Bell Prover

vide high capacity with a minimum change in pressure. A straight scale with magnified scale at the main divisions has been provided to facilitate close reading.

Motor

CENTURY ELECTRIC COMPANY

A new line of totally enclosed fan-cooled motors, designed to provide protection where air is foggy with metal cutting solutions or where there are abnormal quantities of metallic, abrasive and other dusts in the atmosphere that

Century Electric's Fan-Cooled Motor

would ordinarily injure or clog the windings of a general purpose open motor, has been announced by Century Electric Company, 1806 Pine Street, St. Louis, Missouri.

A non-sparking fan is provided to force cooling air through large passages, so designed that a 5/16-inch rod will not pass through them. The motors are finished in a smooth machine gray.

Potentiometer Pyrometers

The Brown Instrument Company, Wayne and Roberts Avenues, Philadelphia, has issued Catalog 1104 describing its potentiometer pyrometers. It contains illustrations of interior and exterior views of indicating, recording and control pyrometers. Also described is the company's radiamatic pyrometer, auxiliary switches, control accessories, multiple key switches, thermocouple installations, list of chart and scale ranges, and drilling and mounting dimensions.

Meters

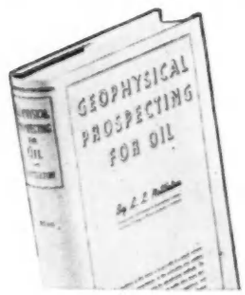
Ralph N. Brodie Company, 949 61 Street, Oakland, California, has issued Bulletin 142-C covering meters designed for tank trucks, loading racks and other services.

The Lane-Wells Company has openings for several men in the Field Service Department. Prefer married men over twenty-five who are graduate petroleum or electrical engineers and who have had oil field experience.

Also have openings for sales engineers. Same qualifications as above plus ability and personality to sell technical services to oil company field men, engineers, and executives.

For consideration, applications must be made by letter in own handwriting. P. O. Box 1407, Houston, Texas.

REGISTERED PROFESSIONAL ENGINEERS
Air · Gas · Water
REPRESSURING
RECYCLING • PRESSURE MAINTENANCE
INSTALLATION • OPERATION
PETROLEUM ENGINEER
JO H CABLE
WICHITA FALLS TEXAS
GAS MEASUREMENT • PERMEABILITY
COMPRESSOR PLANTS • POROSITY
BOTTOM HOLE PRESSURE • SATURATION
GAS OIL RATIOS • RECOVERABLE OIL
CONTROL OF FLOW THRU FORMATION
REGISTERED PROFESSIONAL ENGINEERS



Geophysical Prospecting for Oil

By L. L. NETTLETON
Geophysicist, Gulf Research Development Company

This book offers a concise introduction in one volume to all four principal methods of geophysical prospecting, covering the theory, apparatus, field work, and calculations of each and emphasizing the practical interpretation of results in the light of the oil prospector's needs. Each method (gravitational, magnetic, seismic and electrical) is treated separately with a complete development of theory and practice, but in a manner to bring out the relations, comparisons, etc., useful to the prospector in his problems of selecting and applying methods and determining the value of results obtained.

The book also includes emphasis on the increasingly important gravimeter, its operation, and reduction and calculation of gravity values.

444 pages 6 x 9 177 illustrations $5.00
Send orders to the
GULF PUBLISHING CO.
P. O. Drawer 2608 Houston, Texas

Squeaks from the Bull Wheel

Strong Language

Why haven't you mended these sox?

Did you buy that evening cloak you promised me?

No-o.

Well, then, if you don't give a wrap, I don't give a darn.

Modest

Marie, you were entertaining a man in the kitchen last night, weren't you?

That's for him to say, ma'am. But I tried my best.

Not Receptive

A man walked into Robert Ripley's office, took off his hat, and four tulips were growing out of his head. He bowed to the receptionist, and the tulips waved in the wind. "I want to see Robert Ripley," he said.

Receptionist—And what do you want to see him about?

To Taste

What kind of a filling do you want in your tooth, son?

Chocolate.

Worse Than Death

Did you hear the pitiful story of how Mary Brown lost her good name?

What happened?

She married a fellow named Zachrzewska.

Striving to Please

A young subaltern joined a guards depot, his upper lip as yet unadorned with even the suspicion of down. The adjutant sent for him.

"You must grow a mustache."

"Yes, sir."

"And not one of those Chaplin affairs—a proper mustache."

"Yes, sir."

The interview was finished, but the subaltern did not move, so the adjutant asked:

"Well, what more do you want?"

"Any particular color, sir?"

Contrary

"And after we had been riding awhile, she suddenly got off her horse, spoke a curt good-bye, and walked back."

"Sorehead, eh?"

"No, on the contrary."

Couldn't Wait

"I want a tooth out, an' I don't want gas, 'cause I'm in a hurry."

"That's a brave boy! Which tooth is it?"

"Show the man your tooth, Jimmie."

No Middle Man

An old negro went to his pastor and handed him a letter addressed to the Lord which read: "Please send dis poor darkey $50 right away." The kind-hearted pastor called together several of his friends and said, "This poor fellow has so much faith in the Lord that he expects Him to send the $50 right away. We shouldn't let him be disappointed. Let's make a collection for him."—This was done and $45 was contributed, which sum was sent to the ingenious petitioner.

The next day the parson received another letter from the old darkey. It read: "Dear Lord, De nex time You send this darkey money, don't send it through no parson—send it to me direct."

Appropriately

"Do you know what Paul Revere said after finishing his great ride?"

"No, what?"

"Whoa!"

Modern

"Madam, do you mind if I smoke?"

"Oh, dear me, no. I don't give a damn if you burst out in flames! Gimme a light."

Oh!

"Are you still engaged to that homely Smith girl?"

"No, I'm not."

"Good for you, old man. How did you get out of it?"

"I married her."

Peek-A-Boo

Who's the little man who wasn't there?

The guy that turns on the light in the refrigerator when you open the door.

The Country Guide

"Can you tell me the way to the church?"

"Certainly, sir," replied the oldest inhabitant, obligingly. "Go up the down, keep straight along the crooked lane, then round the square, and when you turn left, you're right."—Montreal Star.

Page Dr. Dafoe

"How's the wife?"

"Bad. She's got Quinsy."

"Good heavens. How many does that make altogether?"

Not So Fortunate

"Oh, you will want the Rose Suite, I am sure."

"I'll take something less expensive."

"But," protested the clerk, "your son always occupies the Rose Suite when he is here."

"I know, but you see he's more fortunate than I am. He has a rich father."

Annoyed the Foxes

She was in Alaska looking over a fox farm. After admiring a beautiful specimen, she asked her guide, "Just how many times can the fox be skinned for his fur?"

"Three times, madam," gravely said the guide. "Any more than that would spoil his temper."

Impressive

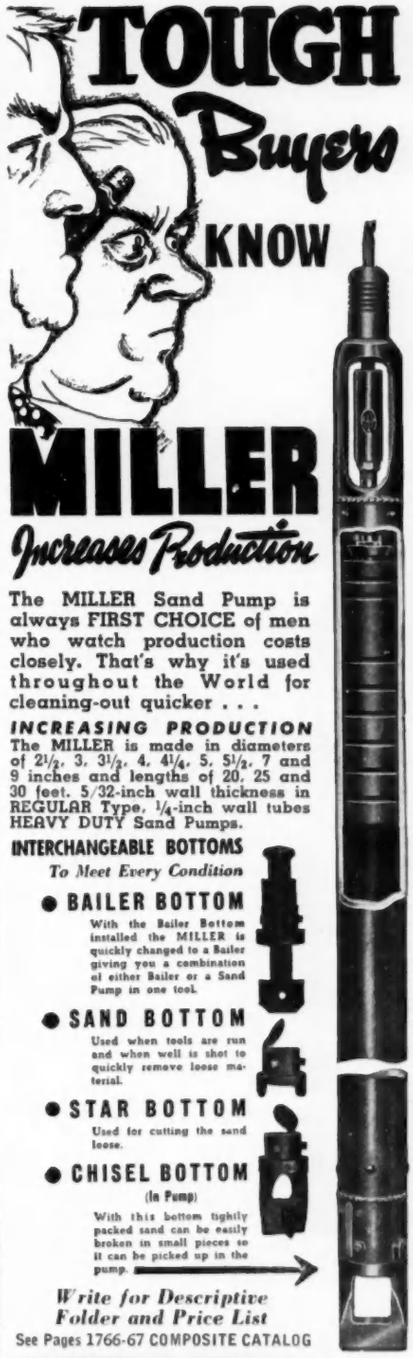
A young lawyer, pleading his first case, had been retained by a farmer to prosecute the railroad for killing 24 hogs. He wanted to impress the jury with the magnitude of the damage.

"Twenty-four hogs, gentlemen. Twenty-four; twice the number there in your box."

Grand Finale

"Was your bachelor party a success?"

"Was it! Man alive, we had to postpone the wedding for a whole week."



The MILLER Sand Pump is always FIRST CHOICE of men who watch production costs closely. That's why it's used throughout the World for cleaning-out quicker . . .

INCREASING PRODUCTION

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes HEAVY DUTY Sand Pumps.

INTERCHANGEABLE BOTTOMS

To Meet Every Condition

- **BAILER BOTTOM** — With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.
- **SAND BOTTOM** — Used when tools are run and when well is shot to quickly remove loose material.
- **STAR BOTTOM** — Used for cutting the sand loose.
- **CHISEL BOTTOM** (In Pump) — With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Pages 1766-67 COMPOSITE CATALOG

PATENTS: NO. 1370480, NO. 1523608, NO. 1787868, NO. 1824828, NO. 1866848, NO. 2052067

MILLER Sand Pump Co.

General Offices and Factory:

OKLAHOMA CITY, OKLAHOMA

1524 S.E. 29th — P. O. Box 4516 — Tel. 7-6884

Export Department:
Suite 4616-30 Rockefeller Plaza, New York

Branches:

SAPULPA	SALEM	KILGORE
Oklahoma	Illinois	Texas
Tel: 341	Tel: 101	Tel: 545

FOR SALE BY SUPPLY STORES EVERYWHERE

INDEX TO ADVERTISERS

*** Indicates that detailed information on the manufacturer's products or services may be found in the 1941 edition of The Composite Catalog of Oil Field & Pipe Line Equipment.**

A

	Page
*Abercrombie Pump Co.	—
*Acme Fishing Tool Co.	—
*Advanced Petroleum Equipment Corp.	—
Air Reduction Sales Co.	—
*Ajax Iron Works	—
*Aiten's Foundry & Machine Works	—
Aluminum Company of America	—
Aluminum Ore Co.	—
American Assn. of Petroleum Geologists	—
*American Cable Division of American Chain & Cable Co.	—
American Cast Iron Pipe Co.	—
*American Hammered Piston Ring Division of Koppers Co.	—
American Hoist & Derrick Co.	—
*American Iron & Machine Works Co.	—
*American Meter Co.	—
*American Sand-Banum Co.	69
*American Steel & Wire Co.	—
Atlas Drop Forge Co.	—
Atlas Powder Co.	—
Atlas Supply Co.	—
Axelson Manufacturing Co.	—

B

*Baash-Ross Tool Co.	23
*Baker Oil Tools, Inc.	—
*Baroid Sales Division	—
William M. Barret, Inc.	—
*The Barrett Co.	70
*Bartlett-Hayward Division of Koppers Co.	—
*Bethlehem Steel Co.	29
*Bethlehem Supply Co.	—
*Braden Steel Corp.	—
*The Brewster Co.	—
The Bridgeport Machine Co.	—
*Broderick & Bascom Rope Co.	—
*Brown Oil Tools, Inc.	—
*The Buckeye Traction Ditcher Co.	—
*Bucyrus-Erie Co.	—
*The Buda Co.	—
*Butler Manufacturing Co.	—
*Byron Jackson Co.	5

C

Jo H. Cable	78
*Cameron Iron Works	45
*Cardwell Manufacturing Co.	—
Carnegie-Illinois Steel Corp.	—
*Caterpillar Tractor Co.	30-31
*Cavins Bailer Service of Texas	74
*Chain Belt Co.	—
*Clark Bros. Co.	—
*Climax Molybdenum Co.	—
*Coffing Hoist Co.	—
Continental Oil Co.	—
The Continental Supply Co.	—
*Fred E. Cooper Co.	—
*The Cooper-Bessemer Corp.	—
Crane Co.	—
W. H. Curtin Co.	—

D

*Darling Valve & Manufacturing Co.	4
Dedman Foundry & Machine Co.	62
*Diamond Chain & Manufacturing Co.	—
*Dixon Valve and Coupling Co.	—
*Dowell Incorporated	—
*The Dragon Manufacturing Co.	—
*E. I. du Pont de Nemours & Co.	—

E

*Eastman Oil Well Survey Co.	—
Economy Electric Lantern Co.	—
*Elastic Stop Nut Corp.	—
*Engineering Laboratories, Inc.	—

F

Failing Exploration & Drilling Co.	78
First National Bank in Dallas	—
First National Bank in Houston	—
First National Bank & Trust Co. of Tulsa	—
Fluid Packed Pump Co.	—
Ford Motor Co.	—
The Fort Worth Clearing House Assn.	—
The Fort Worth Laboratories	70
Fort Worth Steel & Machinery Co.	—
*Franks Manufacturing Corp.	—
Frick-Reid Supply Corp.	—
Frost National Bank	—

G

*Gardner-Denver Co.	—
*The Garlock Packing Co.	—
*Gaso Pump & Burner Manufacturing Co.	—
*Gatke Corp.	—
General American Transportation Corp.	—
*General Electric Co.	36-37
General Geophysical Co.	—
General Motors Sales Corp.	—
Geological Scientific Service Co.	—
Geophysical Service, Inc.	—
Goetze Gasket & Packing Co.	—
*Goodyear Tire & Rubber Co.	1
*H. P. Gott Manufacturing Co.	—
*Gray Tool Co.	—
*Green Head Bit & Supply Co.	—
Howard Greene Torpedo Co.	—
*The Guiberson Corp.	—
*Gulf Coast Machine & Supply Co.	—
Gulf Coast Petroleum Laboratory	—
Gulf Envelope Co.	78
Gulf Oil Corp.	—
*Gulf Publishing Co.	52
Gunter Hotel	—

H

*Halliburton Oil Well Cementing Co.	Fourth Cover
Hardway & Cathey	70
C. J. Harter, Machinery	78
*Haynes Stellite Co.	—
*Hazard Wire Rope Division of American Chain & Cable Co.	—
Heidie's Machine Works	—
The Hercules Powder Co.	—
*Hewitt Rubber Corp.	—
*Hobbs Manufacturing Co.	—
Hollywood Plaza Hotel	—
Houston Laboratories	70
Houston Pipe Appliances Co.	—
*Hughes Tool Co.	First Cover
Humble Oil & Refining Co.	—
*Hunt Tool Co.	—
Hyatt Bearings Division	—

I

Independent Exploration Co.	—
Industrial Engineering Service	—
*Ingersoll-Rand Co.	—
*International Harvester Co.	—
The International Nickel Co.	—

J

Jarecki Manufacturing Co.	49
*Jensen Brothers Manufacturing Co.	—
*Johns-Manville	—
*M. O. Johnston Oil Field Service Corp.	—
Jones & Laughlin Steel Corp.	—

K

Kansas Gas & Electric Co.	—
*Kerotest Manufacturing Co.	—
*Keuffel and Esser Co.	—
*Kibele Manufacturing Co.	—
*Kinzbach Tool Co.	—
*Kobe, Inc.	—
*Koppers Co.	—

L

Hotel Lafayette	61
Lamtex Equipment Corp.	72
Landis Machine Co.	—
*Lane-Wells Company	—
*Larkin Packer Co.	—
*The Thomas Laughlin Co.	73
*The Layne & Bowler Co.	—
Lebanon Steel Foundry	4
*Le Roi Co.	—
*A. Leschen & Sons Rope Co.	—
*The Lincoln Electric Co.	—
*Line Scale Co.	—
*Link Belt Co.	—
C. D. Lockwood's Oil Report	62
Lone Star Cement Corp.	Second Cover
*Lucey Boiler & Manufacturing Co.	—
*Lucey Export Corporation	—
*The Ludlow Valve Manufacturing Co.	—

M

Macwhyte Co.	—
*Maintenance Engineering Corp.	72
*Martin-Decker Corp.	—
P. R. Mallory & Co., Inc.	—
The Marley Co.	—
Marmon-Herrington Co.	—
*John N. Martin, Manufacturer	—
*McEvoy Co.	—
*McKissick Products Corp.	—
*Merco Centrifugal Co.	—
*Merco Nordstrom Valve Co.	—
*Merla Tool Corp.	—
*Metric Metal Works	—
*Miller Sand Pump Co.	79
*Minneapolis-Moline Power Implements Co.	—
*Mission Manufacturing Co.	76
*Morse Chain Co.	—
Mott-Smith Corp.	—
The Jno. Muller Co.	—
Murray Rubber Co.	—

N

National Bank of Tulsa	—
*National Lead Co.	—
The National Supply Co.	24-25
National Tube Co.	—
Nicholson File Co.	—
Norvell-Wilder Supply Co.	—
*Novo Engine Co.	—

O

*Oil Center Tool Co.	—
*Oil City Brass Works	58
Oil Industry Mailing List Co.	—
Oil Well Supply Co.	8
*Otis Pressure Control, Inc.	—

P

*The Parkersburg Rig & Reel Co.	47
*Patterson-Ballagh Corp.	42
*Pelican Well Tool & Supply Co.	63
Petroleum Electric Power Assn.	—
Petroleum Rectifying Co. of California	—
*Pittsburgh Equitable Meter Co.	—
*Pittsburgh Steel Co.	—
Plymouth Cordage Co.	—

Q

*Quaker Rubber Corp.	—

R

Reading-Pratt & Cady Division of American Chain & Cable Co.	75
*Rector Well Equipment Co.	—
*Reda Pump Co.	—
*Reed Roller Bit Co.	40-41
*Regan Forge & Engineering Co.	—
Republic National Bank	6
Republic Steel Corp.	—
*The Ridge Tool Co.	—
*John A. Roebling's Sons Co.	2-3

S

Safety Gas Main Stopper Co.	—
Jack A. Schley	70
*Schlumberger Well Surveying Corp.	—
The Second National Bank of Houston	—
*Security Engineering Co.	—
Seismic Exploration Co.	—
Seismograph Service Corp.	—
*Shaffer Tool Works	—
Shell Oil Co., Inc.	—
Shilstone Testing Laboratory, Inc.	70
*SKF Industries, Inc.	—
A. O. Smith Corp.	—
*E. M. Smith Co.	—
*South Chester Tube Co.	—
Southern Engine & Pump Co.	—
Southern Pacific Lines	—
Spang Chalfant, Inc.	—
*Spang & Company	—
*Sperry-Sun Well Surveying Co.	—
*Standco Brake Lining Co.	—
*Star Drilling Machine Co.	—
Straus-Bodenheimer Co.	—

T

Taylor Forge & Pipe Works	—
E. C. Tecktonius Manufacturing Co.	—
*Templeton, Kenly & Co.	—
Texaco Development Corp.	—
The Texas Co.	—
Texas Electric Steel Casting Co.	—
The Thermoid Co.	—
Thompson Tool Co.	—
*Thornhill-Craver Co.	74
*The Timken Roller Bearing Co.	—
Edgar Tobin Aerial Surveys	—
*Tretolite Co.	—
Trinity Portland Cement Co.	—
Tulsa Shock Absorber Co.	—
*Twin Disc Clutch Co.	—

U

*Union Carbide & Carbon Corp.	—
*Union Wire Rope Corp.	61
*Unit Rig and Equipment Co.	Third Cover
*United States Rubber Co.	—
United States Steel Corp.	—
*Universal Atlas Cement Co.	—
*Universal Engineering Co.	—

W

P. A. Ward & Co.	—
Warner & Swasey Co.	10
*Waukesha Motor Co.	—
Well Surveys, Inc.	—
Western Electric Co.	—
*Westinghouse Electric & Manufacturing Co.	7
*Wheeling Machine Products Co.	—
*The Wheland Co.	—
Whitney National Bank	—
Wichita Engineering Co.	—
*Wickwire Spencer Steel Co.	—
*J. H. Williams & Co.	—
*Wilson Manufacturing Co.	—
Wilson Supply Co.	—
*Wisconsin Motor Corp.	—
*Witte Engine Works	—
*Worthington Pump & Machinery Corp.	—
Wyatt Metal & Boiler Works	—

Y

Youngstown Sheet & Tube Co.	—